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PROCEEDINGS

OF THE

AMERICAN SOCIETY

OF

CIVIL ENGINEERS

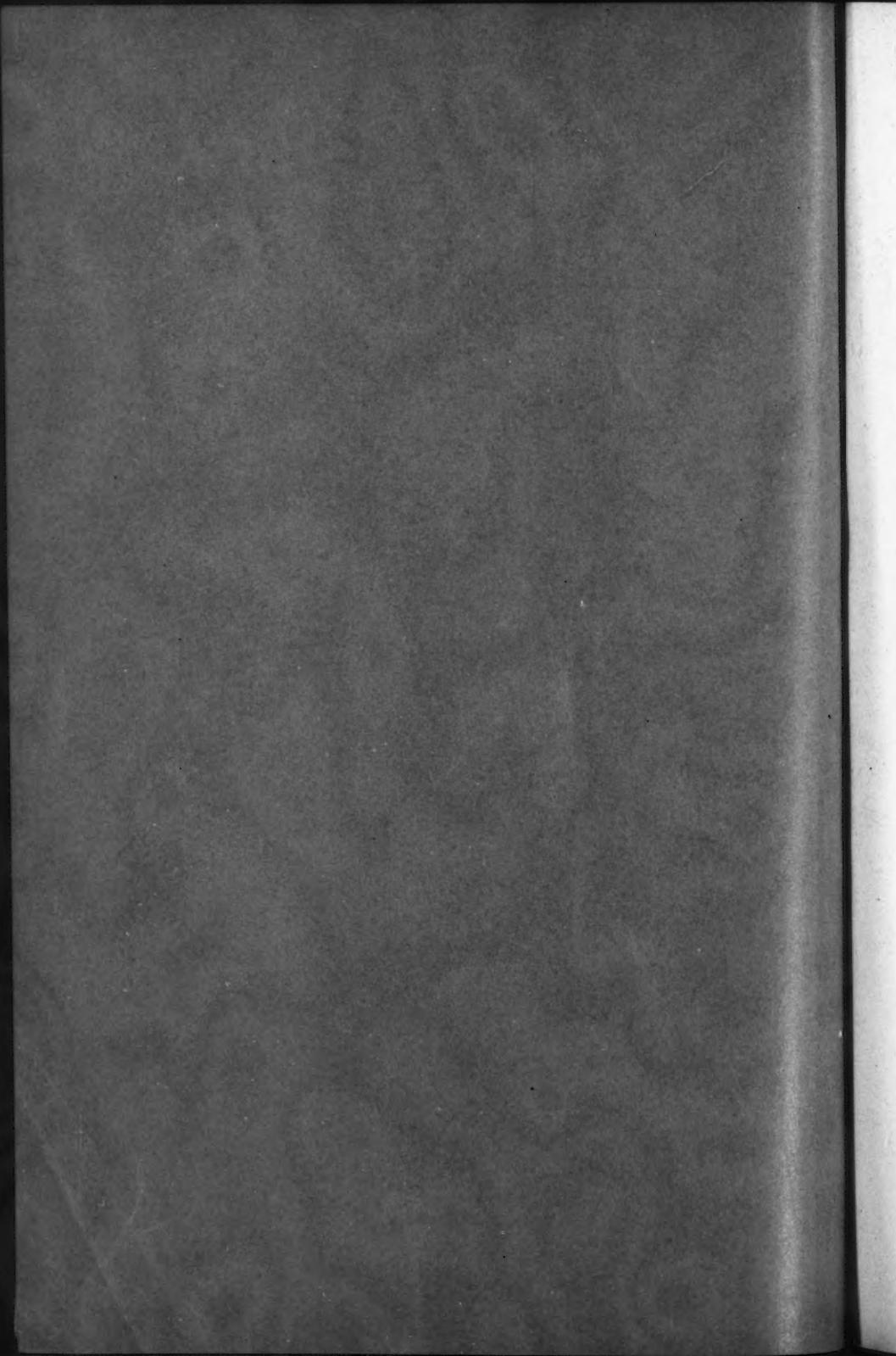
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as such from a scientific and to maintain its authority throughout the world. It is the object of the Society to promote the welfare of the engineering profession, and to assist in the development of engineering science and practice.

AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

SOCIETY AFFAIRS

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MINUTES OF MEETINGS

OF THE SOCIETY

October 17th, 1917.—The meeting was called to order at 8.30 P. M.; Director L. D. Rights in the Chair; Chas. Warren Hunt, Secretary; and present, also, 127 members and 9 guests.

A paper by the late H. M. Chittenden, M. Am. Soc. C. E., entitled, "Detention Reservoirs with Spillway Outlets as an Agency in Flood Control," was presented by the Secretary, who also read communications on the subject from Messrs. Arthur E. Morgan and Alexander Rice McKim. The paper was discussed orally by T. Kennard Thomson, M. Am. Soc. C. E.

Charles Evan Fowler, M. Am. Soc. C. E., addressed the meeting in reference to the late Gen. Chittenden, with whom he was intimately

acquainted, giving an appreciation of his qualities as a man and as an engineer.

A paper by A. L. Sonderegger, M. Am. Soc. C. E., entitled "Hydraulic Phenomena and the Effect of Spreading of Flood Water in the San Bernardino Basin, Southern California", was presented by the Secretary, who also announced that this paper had been presented before the Southern California Association of Members of the American Society of Civil Engineers at its meeting of April 11th, 1917. Discussions by Messrs. William Mulholland and Charles H. Lee, presented at that meeting, were read by the Secretary.

The Secretary announced the election of the following candidates on October 9th, 1917:

AS MEMBERS

JAMES ALLEN, Olympia, Wash.
CHARLES ERWIN BARGLEBAUGH, El Paso, Tex.
JOHN BEALLE BATTLE, El Paso, Tex.
FRANCIS MARION BUTLER, Orbisonia, Pa.
LE ROY FRANCIS HARZA, Sault Ste. Marie, Ont., Canada
HERBERT HENDERSON, Port Arthur, Tex.
NILS HERMAN BAASHUUS JESSEN, New York City

AS ASSOCIATE MEMBERS

HENRY STANLEY ALLEN, Kansas City, Mo.
GUSTAF BIRGER ANDREEN, Elmhurst, N. Y.
CHARLES NEWTON BAINBRIDGE, Lombard, Ill.
EUGENE DUSTON BARSTOW, Cuyahoga Falls, Ohio
FRED BENNETT, Denison, Tex.
ODIN BALTIMORE BESTOR, Albany, N. Y.
KITCHELL MONCKTON BOORMAN, New York City
HORACE TROWBRIDGE BROWN, San Francisco, Cal.
OSCAR ERNEST BULKELEY, Jackson, Mich.
PAUL NELS CARLSON, Seattle, Wash.
MERWIN BISHOP CARSON, Honolulu, Hawaii
CHARLES GROVER CHAMBERLIN, Wichita, Kans.
HUGH WILLIAM CRAWFORD, Topeka, Kans.
HORACE CULPEPER, Houston, Tex.
BERT E. DODGE, Madison, Wis.
CLAUDE LACY DOUTHETT, Sidell, Ill.
GEORGE LUCAS DRESSER, New York City
HAROLD MANSFIELD EDDY, Canton, Ohio
RILY ELLSWORTH ELGEN, Chattanooga, Tenn.
JAMES ROBERT FAIRMAN, Kansas City, Mo.
GEORGE KEITHLEY FARNER, San Francisco, Cal.
ARTHUR VIRDIN FOARD, Baltimore, Md.
NATHAN HENRY GELLERT, Wayne, Pa.
GEORGE CHRISTIAN GRAETER, Sullivan, Ind.

GUY MORLEY HARBERT, Clarksburg, W. Va.
FREDERIC GEORGE HEALY, Bridgeport, Conn.
CHARLES HENRY HOLSTLAW, West Palm Beach, Fla.
FRANK JOHNSON HOUSEHOLDER, Baltimore, Md.
BERNHARD FAABORG JAKOBSEN, San Francisco, Cal.
ALBERT FREDERICK JOHNTZ, Camaguey, Cuba
WILLIAM DONELSON JONES, Los Angeles, Cal.
BENEDICT JOSEPH KAISER, Pittsburgh, Pa.
FRANK HIRAM KNAPP, Blasdell, N. Y.
HENRY WAY LEAL, Chicago, Ill.
WILLIAM SHANNON LOHR, Lancaster, Pa.
HUGH JOHN LUMSDEN, Kansas City, Mo.
HARRY ENGLAND McCOOL, Duluth, Minn.
WILLIAM FREDERICK McDONALD, Milwaukee, Wis.
WILLIAM HENRY MEAD, Houston, Tex.
MELVILLE SAMPSION MILLER, Brooklyn, N. Y.
KENDALL TUTTLE MURPHY, Baltimore, Md.
JAMES LEE MURRAY, Mittineague, Mass.
ALVA HAROLD PERKINS, Am. Exp. Force, France
FRANK HURD PICKETT, Bridgeport, Conn.
JAMES HANDSIDLE REDING, Fort Sheridan, Ill.
HARLOW LOVERIDGE ROCKWELL, Buffalo, N. Y.
GEORGE VIALL SALLE, Cincinnati, Ohio
CHARLES WILLIAM SYLVERIUS SAMMELMAN, St. Louis, Mo.
BEALE MELANCTHON SCHMUCKER, Haddon Heights, N. J.
IVAN OSCAR SHAFFER, Summit, N. J.
KENNETH SHIBLEY, San Francisco, Cal.
ROBERT EARLE SHIPLEY, Texarkana, Tex.
SAMUEL SPAULDING STEVENS, Washington, D. C.
HERBERT MILLER STOFFLET, Chicago, Ill.
EDWARD STUART, Harrisburg, Pa.
JOHN ABRAHAM VAN DEN BROEK, Ann Arbor, Mich.
JULIUS VERNER, Linden, N. J.
JOSEPH JOHNSON VOGDES, Philadelphia, Pa.
HARRISON BILLINGSLEY WALTON, Little Rock, Ark.
WYLIE BRODBECK WENDT, Manhattan, Kans.
HERMAN FREDERICK WIEDEMAN, Atlanta, Ga.

As Juniors

GEORGE ROBERT BICKEL, Louisville, Ky.
HAROLD FOLLMER BUCHER, Watsontown, Pa.
MERTON SHUMWAY FOGERTY, Groveton, N. H.
WALTER FRITZ, New York City
MARION COLUMBUS HUCKABY, Baton Rouge, La.
WILLIAM FRANCIS LOCKHARDT, Brooklyn, N. Y.

WILLIAM MAXWELL MARKER, Stanford University, Cal.

ALBERT CLARK MATTHEWS, Jr., Orange, Va.

MORTIMER LOUIS NEINKEN, Brooklyn, N. Y.

JAMES PARKER, Tulsa, Okla.

ALFRED RENSHAW, New York City

HERMAN RITOW, New York City

NORMAN FRASER STRACHAN, Lawrence, Kans.

JOSÉ ALEXANDRE TEIXEIRA DE MELLO, Troy, N. Y.

STEPHEN RIGGS TRUESDELL, Jackson, Mich.

CLIFTON L'ORIGINAL WEEKES, Cincinnati, Ohio

LEE HOMMES WILLIAMSON, Rancagua, Chile

The Secretary announced the transfer of the following candidates on October 9th, 1917:

FROM ASSOCIATE MEMBER TO MEMBER

GEORGE ELLSWORTH BARROWS, Buffalo, N. Y.

HERBERT ERNEST BELLAMY, Crib Point, Victoria, Australia

ROBERT MAVIN COOKSEY, Baltimore, Md.

WALTER LOUIS DU MOULIN, Antofagasta, Chile

AUGUSTUS GRIFFIN, Manteca, Cal.

VICTOR FRANK HAMMEL, New York City

CHARLES FRANK HEALEY, Chicago, Ill.

REUBEN SYLVESTER PEOTTER, Paramaribo, Dutch Guiana

BION HARMAN PIEPMEIER, Springfield, Ill.

PAUL LEON PIERCE, New York City

GEORGE MOSES PURVER, Brooklyn, N. Y.

LEROY NORMAN REEVE, Denver, Colo.

ROBERT BRUCE TINSLEY, Chuquicamata, Chile

FROM ASSOCIATE TO ASSOCIATE MEMBER

CLARK EDWIN MICKEY, Lincoln, Nebr.

FROM JUNIOR TO ASSOCIATE MEMBER

FRANKLIN REA ALLEN, Pine Bluff, Ark.

RUSSELL VINCENT BANTA, New York City

TOM ALLEN BITHER, Berkeley, Cal.

SIDNEY BREESE BOWNE, Mineola, N. Y.

ARTHUR GRAY BUTLER, Cleveland, Ohio

HARRY FOSTER FERGUSON, Urbana, Ill.

JAMES GORDON GOODFELLOW, Edinburgh, Scotland

HOMER MORE HADLEY, Vancouver B. C., Canada

LEWIS MERRICK HAMMOND, Washington, D. C.

ALLEN HOAR, Alameda, Cal.

LEIGH PATTERSON JERRARD, Madison, Wis.

HARRY KORNFIELD, Brooklyn, N. Y.

HUNTER McCCLURE, San Francisco, Cal.

HARRY GAILLARD RIBLET, Erie, Pa.

ROGER CUSHING RICE, Topeka, Kans.

ALSTON ORANGE ROSE, Pittsburgh, Pa.

WILLIAM STAVA, San Francisco, Cal.

LEON SWARTZ, East Oakmont, Pa.

HARRY STRONG WINN, Kansas City, Mo.

The Secretary announced the following deaths:

DANIEL MARSHALL ANDREWS, of Montgomery, Ala., elected Member, March 2d, 1892; died June, 1917.

HIRAM MARTIN CHITTENDEN, of Seattle, Wash., elected Member, February 7th, 1900; died October 9th, 1917.

ELMER ELLSWORTH COLBY, of Chickasha, Okla., elected Member, January 7th, 1913; died October 4th, 1917.

WILLIAM WALTER MARR, of Springfield, Ill., elected Member, February 2d, 1909; died October 3d, 1917.

Adjourned.

November 7th, 1917.—The meeting was called to order at 8.30 p. m., in the Auditorium of the United Engineering Building; President Pegram in the chair; Chas. Warren Hunt, Secretary; and present, also 120 members and 6 guests.

The minutes of the meetings of September 19th and October 3d, 1917, were approved as printed in *Proceedings* for October, 1917.

A paper by Charles W. Okey, Assoc. M. Am. Soc. C. E., entitled "The Subsidence of Muck and Peat Soils in Southern Louisiana and Florida", was presented by the Secretary, who also read communications on the subject from Messrs. Arthur E. Morgan and Orrin Randolph. The paper was discussed further by Messrs. J. F. Coleman, Rudolph Hering, and T. Kennard Thomson.

A second paper, by H. C. Vensano, M. Am. Soc. C. E., entitled "Pulsations in Pipe Lines, as Shown by Some Recent Tests", was presented by the Secretary, who also read a communication on the subject from Norman R. Gibson, M. Am. Soc. C. E. The paper was discussed, also, by Messrs. Rudolph Hering and R. D. Johnson.

The Secretary announced the following deaths:

WILLIAM SINCLAIR BACOT, of Utica, N. Y., elected Member, October 1st, 1890; died October 31st, 1917.

HARRY MADERA GOULD, of Nashville, Tenn., elected Member, November 30th, 1909; died September 30th, 1917.

JOHN EDWARD SWANKER, of Buffalo, N. Y., elected Member, May 4th, 1904; died October 20th, 1917.

LOUIS WACHTEL, of Wells, N. Y., elected Junior, March 2d, 1909; Associate Member, September 2d, 1914; died October 10th, 1917.

Adjourned.

OF THE BOARD OF DIRECTION

(Abstract)

June 11th, 1917.—The Board met at 10.10 a. m.; President Pegram in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Coleman, Craven, Crocker, Davies, Fay, Flinn, Herschel, Hill, Humphreys, Kittredge, Khuen, McDonald, Marx, Noble, Ockerson, Rights, Swain, and Webster.

Mr. Hunt presented a statement signed by himself in answer to the statement presented at the meeting of April 17th, 1917, signed by Messrs. Endicott, Ockerson, and McDonald.

On motion, duly seconded, it was:

Resolved: To expunge from the Minutes all letters and communications in regard to the work of the Committee of the Board on Revision of the Constitution."

The President was requested to appoint a Committee of three to consist of members of the Board whose names have not appeared in the controversy in regard to the Report of this Committee, such Committee to select the matter to be expunged from the Minutes and removed from the files of the Society. The President subsequently appointed Messrs. Alfred D. Flinn, George A. Harwood, and Frederick C. Noble.

The Secretary presented his Financial Report from January 1st to date, together with a certificate of the Auditors.

Reports of Progress were received from the Chairmen of the Finance, Library, and Publication Committees.

The following report was presented by Mr. Davies:

"**THE BOARD OF DIRECTION,**
American Society of Civil Engineers,
New York, N. Y.

"Gentlemen: At your last meeting, April 17, 1917, you referred to the Committee on Special Committees two matters for investigation and report, regarding which we beg to submit the following report:

"(1).—*Request for the Appointment of a New Special Committee on Concrete and Reinforced Concrete.*

"We have given careful consideration to the possible advantages to the Society of continuing the Special Committee on Concrete and Reinforced Concrete or of the appointment of a new Special Committee. Since the date of the recent report there is nothing new in the art which would warrant continuing the old, or appointing a new, Special Committee to continue the work beyond the scope of the final report which was presented in January. There is no warrant under our Constitution for maintaining a Special Committee perpetually to watch developments in any particular branch of the art of engineering.

"Our recommendation is that no such Special Committee should be continued nor new Special Committee appointed. In the future,

when there shall have been some further advance in the use of concrete and reinforced concrete sufficient to warrant a further study and report on the subject, the appointment of a Special Committee can be considered on its merits.

"(2).—Request for the Appointment of a Special Committee of Five Members to Investigate and Report on the Conditions and Opportunities for American Engineers in Russia and in South America.

"Article VI, Section 12, of the Constitution of the Society, provides that, 'Special committees to report upon engineering subjects shall be authorized, except as further provided in this paragraph, etc.' In our opinion, the matter of investigating the conditions and opportunities for American Engineers in Russia and in South America, does not come within the scope of the meaning of 'engineering subjects', and we, therefore, recommend against the appointment of such a Committee as is requested.

"In submitting this report, we beg to state that while it is not signed by Mr. W. L. Darling, a member of the Committee on Special Committees, the recommendations herein made are fully concurred in by him. The absence of Mr. Darling's signature hereto is due to his leaving this country on government business prior to the report being written.

"Committee on Special Committees,

"J. V. DAVIES, *Chairman*,

"GEO. W. TILLSON."

The recommendations of the Committee were adopted as the action of the Board.

The Secretary presented the Minutes of a meeting of the Executive Committee, held May 8th, 1917, which had already been forwarded to the members of the Board. The action taken by the Committee was as follows:

(1) To abandon the Minneapolis Convention, and to circularize the membership in regard to it.

(2) A resolution to the effect that remittance of dues cannot be made in advance, but that all members of the Society who enter the U. S. Military Service will be carried on the rolls, if they so request, until the war is over.

(3) An appropriation of \$1 200 made to the Special Committee on Steel Columns and Struts.

(4) A general report on the sale or lease of the Society property.

The action of the Committee in all these matters was approved.

The Secretary reported in the matter of the panelling of two large rooms in the new Society Headquarters in Thirty-ninth Street that careful estimates had been made for the panelling of the larger of the two rooms in oak and of the Board Room in mahogany, the total cost to be approximately \$5 000, and that the work had been ordered.

The action was approved.

The Secretary presented a letter from John C. Hoyt, Secretary, Local Association of Members of the District of Columbia, asking that, in order that the membership may be able to give the fullest consideration to the proposed Revised Constitution, the correspondence ordered spread upon the Minutes of April 17th, 1917, be printed in *Proceedings*, or as a separate publication. The Secretary was directed to inform Mr. Hoyt that the correspondence in question is not now a part of the Minutes of the Board, and to state further that while that correspondence was ordered spread upon the Minutes of the Board of April 17th, it was ordered expunged at this meeting.

Mr. Flinn, Chairman of a committee to report on the proper disposal of the 22 000 duplicates remaining in the Library after its consolidation with that of the U. E. S., reported in favor of disposing of the collection as a whole by presenting it to the Cleveland, Ohio, Association of Members of the Society on the understanding that the collection would be kept intact. This recommendation was adopted as the action of the Board.

President Pegram was authorized to appoint five representatives of this Society on Engineering Council.

The following resolutions were adopted:

"Resolved: That the 'General Conference Committee of the National Engineering Societies' now in being, and consisting of Robert Ridgeway, S. L. F. Deyo, and Chas. Warren Hunt, is hereby discharged; and

"Resolved: That the representatives of this Society in Engineering Council shall, as soon as may be after their appointment, and acceptance of the same, appoint a Secretary whose duty it shall be to report in writing to this Board of Direction, through its Secretary, the Proceedings of said Engineering Council immediately after each meeting of the said Council."

The Secretary reported that he had received many replies from Senators, Representatives, etc., regarding the resolution of this Board on Universal Military Training.

The Secretary reported that the President had named Messrs. J. V. Davies and J. E. Greiner at the request of Dr. Hollis Godfrey of the Advisory Commission, Council of National Defense, and by him had been appointed as members of the Engineering Societies Section of the Committee on Science and Research of the Advisory Commission.

The President was authorized to appoint a Committee to Recommend the Award of Prizes for 1917.

The Secretary presented a card in remembrance of James Forrest, Honorary Secretary, The Institution of Civil Engineers, who died March 2d, 1917, aged 91. Messrs. George W. Kittredge, Clemens Herschel, and J. Vipond Davies were appointed to prepare a suitable response in behalf of this Board.

Director Crocker called attention to the report adopted by this Board in regard to an Employment Bureau, which was referred to the Engineering Council, with the recommendation that it should take up this very important matter.

It was moved, seconded, and carried, that in view of the abandonment of the Annual Convention at St. Paul and Minneapolis, President Pegram be requested to deliver his Address at the time of the Annual Meeting of 1918.

Past-President Swain, as one of the representatives of the Society on the Committee in regard to the adoption of the Metric System, reported, and the following resolution was adopted:

"Resolved: That it is the sense of this Board that this Committee should not be enlarged, but should be confined to representatives of the four National Societies."

The question of the use of metric equivalents, as far as practicable, in the publications of the Society, which has been suggested, was referred to the Publication Committee.

The resignations of 1 Associate Member and of 1 Junior were accepted.

Ballots for membership were canvassed, resulting in the election of 6 Members, 40 Associate Members, and 13 Juniors, and the transfer of 7 Juniors to the grade of Associate Member.

Thirty Associate Members were transferred to the grade of Member.

Applications were considered and other routine business transacted.

Adjourned 3.20 p. m.

June 12th, 1917.—The Board met at 3 P. M.; President Pegram in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Coleman, Crocker, Fay, Herschel, Humphreys, Khuen, McDonald, Marx, Noble, Ockerson, Rights, and Swain.

A report from the Membership Committee was received and acted upon.

Adjourned.

September 11th, 1917.—The Board met at 10.30 p. m., immediately after the adjournment of the Membership Committee; President Pegram in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Davies, Fay, and Noble.

Ballots for membership were canvassed, resulting in the election of 17 Members, 63 Associate Members, 1 Associate, and 19 Juniors, and the transfer of 19 Juniors to the grade of Associate Member.

Twenty-one Associate Members were transferred to the grade of Member, and 1 Associate was transferred to the grade of Associate Member.

A Report from the Membership Committee was received and acted upon.

Adjourned.

October 9th, 1917.—The Board met at 10.10 A. M.; President Pegram in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Coleman, Davies, Davis, Duryea, Fay, Harwood, Herschel, Khuen, Noble, Ockerson, Rights, Tillson, and Webster.

Messrs. Crocker, Flinn, and McDonald came in during the session.

The resignation of Director F. G. Jonah on account of his having gone into active service in the Army was received and accepted.

John W. Alvord was unanimously appointed to fill the vacancy for the unexpired term as a representative of District No. 8.

The Report of the Nominating Committee was received.

On motion, duly seconded, a contribution out of the funds of the Society of \$500 was made toward the erection of a memorial to the late John Ericsson, Hon. M. Am. Soc. C. E.

A report was received from the Library Committee.*

Mr. Harwood, Chairman of the Publication Committee, reported in the matter which had been referred to it by the Board that the Committee had unanimously decided to recommend that the use of metric equivalents in publications of the Society be not adopted.

The recommendation of the Committee was adopted as the action of the Board.

The following resolution was adopted:

"Resolved: That in view of the suggestion of the Committee on Education of the Council of National Defense, that the Engineering Societies through their representation on the General Engineering Committee of the said Council should co-operate with them in connection with the consideration of the subject of Engineering Education: it is recommended to the other National Engineering Societies that this matter, together with the general subject of Engineering Education, be referred to Engineering Council for its active participation and co-operation."

The following resolution with regard to a closer relation between this Society and the Canadian Society of Civil Engineers was adopted:

"Whereas: The American Society of Civil Engineers and the Canadian Society of Civil Engineers are both organized for the purpose of promoting, in every practicable way, co-operation, good feeling and fellowship, and the professional and personal interests of the engineering profession in both countries, and for the maintenance of high professional and personal standards and ethics of conduct; and

* See page 671.

"Whereas: Many of the members of each of these Societies have become members of the other; and

"Whereas: It is in the highest degree desirable that the utmost co-operation and the most cordial relationship should exist between the two Societies, especially in view of the present world crisis, which should draw into closer relationship the United States and Dominion of Canada; be it

"Resolved: That the Board of Direction of the American Society of Civil Engineers formally express to the Council and members of the Canadian Society of Civil Engineers, its desire that the two Societies should co-operate for mutual advancement to the greatest extent possible, and that the Board extend to the members of the Canadian Society of Civil Engineers a cordial invitation to avail themselves of the facilities offered by the American Society of Civil Engineers, to make themselves at home in its rooms and to attend its meetings whenever they may visit New York; and further,

"That inasmuch as both Societies are engaged in the effort to solve the same problems, for which purpose mutual acquaintance and intercourse will be of benefit to both Societies, the Board of Direction of the American Society of Civil Engineers expresses its approval of a plan of holding joint meetings of the two Societies at such times and places as may be found convenient; and further,

"That a copy of these Resolutions be sent to the Council of the Canadian Society of Civil Engineers."

Upon the report of a Committee consisting of Messrs. George W. Kittredge, Clemens Herschel, and J. Vipond Davies, appointed to formulate an appropriate entry to be made in the records of the Society on account of the death, on March 2d, 1917, of James Forrest, Honorary Secretary of The Institution of Civil Engineers, the Board adopted the following Minute:

"In view of his unusual connection during seventy-five years with the Institution of Civil Engineers—sixty-one of which were passed as Assistant Secretary, Secretary, and Honorary Secretary—the Board of Direction of the American Society of Civil Engineers respectfully records its appreciation of the good services done by Mr. James Forrest. His useful career was helpful to Engineering Societies and to the Engineering Profession wherever found.

"Another has said, and, from personal knowledge, it is corroborated:*

"It may truly be said of him that he not only watched over the interests of the Institution with the greatest assiduity and complete success, but that his office was to him a labor of love. Certainly no man ever devoted himself more thoroughly, heart and soul, to his work, than did Mr. Forrest from first to last during his long tenure of office."

"A brief chronological record is,

1825 Born, November 30th, 1825.

1842 Joined staff of Institution of Civil Engineers.

* Address of John Wolfe Barry, President, Institution of Civil Engineers, *Minutes of Proceedings, Inst. C. E.*, Vol. 127, p. 31; *Engineering*, March 9th, 1917.

1845 Awarded a Walker Premium by the Institution for "Drawings and Diagrams Illustrative of Numerous Papers Read at the Meetings". (*Minutes of Proceedings*, Inst. C. E., Vol. 4, p. 4.)

1852 May 4th, balloted for and duly elected as Associate of the Institution. James Meadows Rendel, President. (*Minutes of Proceedings*, Inst. C. E., Vol. 11, p. 477.)

1856 Appointed Assistant Secretary. Robert Stephenson, President. (*Minutes of Proceedings*, Inst. C. E., Vol. 16, p. 187.)

1860 Appointed Secretary. George P. Bidder, President. (*Minutes of Proceedings*, Inst. C. E., Vol. 19, p. 230.)

1896 Retired as Secretary and became Honorary Secretary.

1917 Died, March 2d, 1917."

Mr. Hunt presented a report concerning the finances, furnishing, and building of the new quarters of the Society, which was ordered printed in *Proceedings* for the information of the membership.*

The Secretary reported in regard to the Fifty-seventh Street property that no disposition has yet been made of it. This matter is in the hands of the Executive Committee.

A letter from the American Society of Mechanical Engineers was presented inviting this Society to appoint three of its members to join with similar representation from the Prime Movers Committee of the National Electric Light Association, the American Institute of Electrical Engineers, and the Committee on Power Tests of the Am. Soc. M. E., to assist in framing a Code for the Testing of Water Wheels. The President was empowered to appoint such Committee.

The appointment as representatives of this Society on the Engineering Council of Messrs. John F. Stevens, George F. Swain, Frederick H. Newell, Alexander C. Humphreys and John D. Galloway, was reported.

Director Flinn stated that he is a member of a Committee on Personnel appointed by Engineering Council, and that for this committee a partial list of "Civil Engineer Specialists for War" has been compiled, and that he has been requested to ascertain whether the Board of Direction would provide for and authorize the sending to all members of the Society a questionnaire on this subject.

The Board directed that there be published in *Proceedings* a statement of the work of the Committee of which Mr. Flinn is a member, and that all members of the Society who are available and desirous of serving the Government in the present crisis be asked to classify themselves under the various heads, so that their names may be listed by the Committee of the Engineering Council with a view of aiding the Government.†

* See page 666.

† See page 664.

The appointment of Messrs. J. L. Van Ornum, H. J. Burt, and S. E. Tinkham as a Committee to Recommend the Award of Medals and Prizes for 1917 was reported.

The Secretary stated that the following cable had been received from John F. Stevens, M. Am. Soc. C. E., dated July 31st, 1917:

"Central Board Engineers Ways of Communication send Fraternal Greetings to you request me to thank United States through Society for sending our Advisory Commission to Russia."

Also, that President Pegram had transmitted this to the President of the United States, July 31st, 1917, and had received a reply stating: "The President has asked me to thank you warmly for your kind letter of July 31st. He is very much gratified by your generous words."

A letter from E. P. Goodrich, M. Am. Soc. C. E., Director of Military Census, New York City, was presented, expressing appreciation of himself and colleagues for assistance given by the Society in the work of taking the State Military Census and Inventory. The Secretary also reported that he received a similar letter from Mayor Mitchel.

The Board authorized the appointment of a Committee of the Board to canvass the Preliminary Suggestions for Members of the Nominating Committee on November 1st, 1917, and also fixed the date of December 14th, 1917, for mailing the form for Final Suggestions for Members of the Nominating Committee, and January 15th, 1918, as the date for the final canvass of those suggestions.

The date of the next Board meeting was fixed as January 14th and 15th, 1918.

George H. Pegram was appointed as one of the representatives of this Society on the John Fritz Medal Board of Award to fill the vacancy caused by the retirement from that Board of George F. Swain, whose term expires January 18th, 1918.

Mr. Hunt presented a Report from the Alfred Noble Memorial Committee, which was received and ordered printed in *Proceedings* for the information of the membership.*

The Secretary reported that it had been impossible to secure a list in any way complete of the members of the Society who are in the service in the Army and Navy, and recommended that he be authorized to issue a circular addressed to all members asking for special information in this matter in order that a "Roll of Honor" may be published in *Proceedings*. The authority requested by the Secretary was granted, and it was further decided that such list should be kept up to date and published regularly in *Proceedings*. It

was further decided that this Roll of Honor should be restricted to those holding commissions or official appointments.

A Committee consisting of Alfred D. Flinn, George A. Harwood, and Frederick C. Noble, appointed by the Board at its meeting of June 11th to select matters to be expunged from the Minutes of the Board and removed from the files of the Society in regard to a controversy in connection with the Report of the Committee on Revision of the Constitution, reported that it had unanimously directed the Secretary to expunge from the official Minutes of the Board of Direction the following matter:

1. A minority report dated February 1st, 1917, signed by three members.
2. A majority report dated March 1st, 1917, signed by four members.
3. Letter dated March 19th, 1917, from Dr. Hunt to Mr. Pegram.
4. Letter dated March 22d, 1917, from President Pegram to Dr. Hunt.
5. A document, dated April 17th, 1917, handed to the Secretary on that date and read to the Board, signed by M. T. Endicott, J. A. Ockerson and Hunter McDonald.
6. Statement by H. S. Crocker made verbally at the meeting of the Board April 17th.
7. Letter dated March 23d, 1917, from the Secretary to members of the Board of Direction transmitting proofs of the proposed Constitution and copies of Items 3 and 4 in the above list;

And to remove from the files of the Society the seven items just enumerated, together with:

8. A written communication dated June 4th, 1917, signed by Dr. Hunt, in answer to the statement made by M. T. Endicott, J. A. Ockerson and Hunter McDonald, which was presented to the Board June 11th, 1917, but not made a part of the official minutes;

And to forward all of the above mentioned documents to the Chairman of this Committee, Alfred D. Flinn, who shall hold said documents until the Committee decides when they shall be destroyed.

It was moved and seconded that the Report of the Committee be received and its recommendations adopted.

A roll-call on this motion was called for.

The following members voted to adopt the recommendations of the Committee: Messrs. Crocker, Davies, Duryea, Flinn, Harwood, Khuen, Noble, Pegram, Rights, Tillson, and Webster—11.

The following voted not to sustain the Committee: Messrs. Coleman, Davis, Fay, Herschel, McDonald, and Ockerson—6.

Mr. Hunt did not vote.

The President declared the motion adopted.

The Secretary presented a letter from Onward Bates, Past-President, in regard to the proposed revised Constitution. He also stated that he had letters from Messrs. Leonard Metcalf, and W. S. Richmond, suggesting modifications.

It was moved that Mr. Bates' letter be published in *Proceedings*, and also that all communications in regard to the revised Constitution be published in *Proceedings*. These motions were not voted upon, but after much discussion the Secretary was instructed to advise Mr. Bates and those who had sent in comments that their letters had received careful consideration, and that the matters in them have been referred to the Publication Committee for consideration, and for proper presentation to the entire membership of the Society.

Mr. McDonald presented the following resolution:

Resolved: That at least 25 days prior to the Annual Meeting a notice be sent out to all Corporate Members giving the proposed revision of the Constitution, signed by certain members of the Board, together with a statement of the proposed changes and the reasons therefor, and that the Committee on Publication be authorized to prepare this statement."

The following members of the Board then authorized their names to be signed to the revised Constitution: Messrs. Ockerson, Herschel, Fay, Coleman, Webster, McDonald, Tillson, Davies, Harwood, Khuen, and Davis—11.

The other members of the Board present declined to allow their names to be so used.

The resignations of 4 Associate Members were accepted.

Ballots for Membership were canvassed, resulting in the election of 7 Members, 61 Associate Members, and 17 Juniors, and the transfer of 19 Juniors to the grade of Associate Members.

Thirteen Associate Members were transferred to the grade of Member, and 1 Associate was transferred to the grade of Associate Member.

Applications were considered and other routine business transacted.

Adjourned.

October 10th, 1917.—The Board met at 11.07 a. m.; President Pegram in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Coleman, Crocker, Duryea, Fay, Flinn, Humphreys, Khuen, and McDonald.

A report from the Membership Committee was received and acted upon.

Adjourned.

SOCIETY ITEMS OF INTEREST**Alfred Noble Memorial**

TO THE BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS,

220 W. 57th Street,

New York City.

GENTLEMEN: Your Committee on the Alfred Noble Memorial desires to make a progress report, and believing that the Members of the Society are entitled to some account of our work during the three years of this Committee's existence we have recounted the history of it in the form which follows, with the request that if it meets the approval of your Board, you will direct it be sent out to Members for their information.

During a meeting of the Board of Direction of the American Society of Civil Engineers held on June 2d, 1914, a tribute by the engineering profession to the life and memory of Alfred Noble was unanimously adopted and spread upon the minutes. The Board at the same time thought it proper and desirable to recognize the worth of the man in a more substantial way by erecting a memorial monument to him. This was first brought to the attention of the members of the American Society of Civil Engineers by the circular of the Secretary dated July 1st, 1914.

Memorial a National Honor.—It was decided at that time, that as Alfred Noble's professional practice was national in character and as he was an adviser of the President and other officials of the Government and was consulted on some of the most important engineering work of the country, the Capital of the Nation was the proper location for such a memorial. The Board set aside the sum of \$1 000 as a first subscription towards the necessary funds, and, to get work started, appointed the following committee with power to carry out the project:

Committee Appointed

Messrs. Onward Bates, Chicago, Illinois, Chairman

Robert Moore, St. Louis, Missouri

Samuel Rea, Philadelphia, Pennsylvania

Samuel H. Hedges, Seattle, Washington

F. H. Newell, Washington, D. C.

W. W. Harts, Washington, D. C.

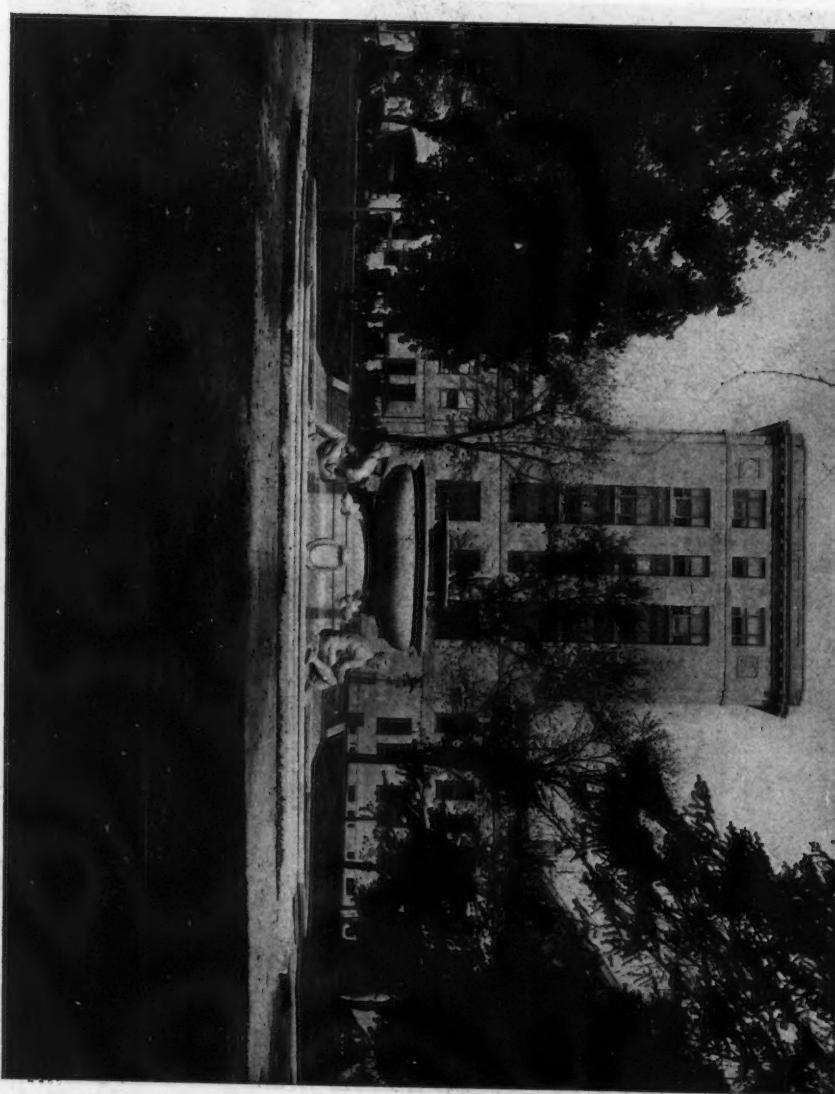
Chas. Warren Hunt, New York City, Secretary

On December 6th, 1916, Mr. Robert Moore resigned from the Committee stating that it had been impossible for him to attend any meetings of the Committee, or give to the subjects committed to them

November, 1917.]

SOCIETY ITEMS OF INTEREST

649



VIEW TO THE NORTH. INTERIOR DEPARTMENT BUILDING IN BACKGROUND.

648

TRANSIENT AURORAL PHENOMENON

1510 October 1961

SOUTH. - 1000 ft. of interest.

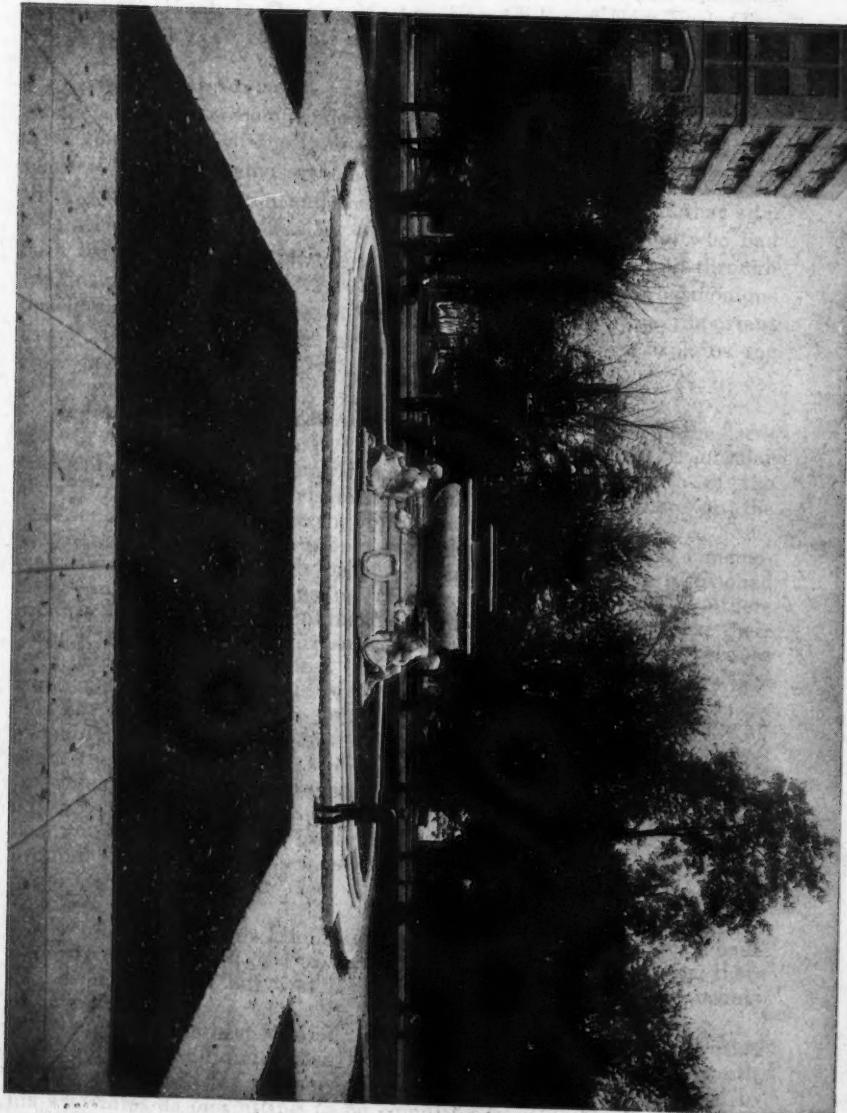


VIEW TO SOUTH.

November, 1917.]

SOCIETY ITEMS OF INTEREST

651



VIEW TO SOUTH.

150

TRIBALZI NO. 4370. 775108

1501. 775108

ANSWER

such attention as they certainly deserved, nor would it be possible for him in the future to do any better, and the Board felt bound to respect his wishes. Hugh L. Cooper, M. Am. Soc. C. E.; of New York City, was appointed to serve in his stead.

Architectural Adviser.—Following the customary proper procedure in such cases, as recommended by the National Commission of Fine Arts, the first step of the Committee was to employ a competent architectural adviser to advise them as to the best site for the purpose in the City of Washington and the best memorial treatment of that site. The architect selected was Mr. Glenn Brown of Washington, who had been recommended as a man of eminence in his profession and through his intimate touch with the established plans for the harmonious development of the National Capital well fitted for this important duty. The following report of the architectural adviser explains the steps taken:

Report of Architectural Adviser.—“In connection with the location of the Noble memorial I have studied many of the triangular parks, like those on Pennsylvania Avenue, the park south of the War Department, the advisability of planting it somewhere on the Mall, and the approaches to the important bridges.

“After careful consideration I have determined that such a memorial could not appropriately be placed on any of the above mentioned sites,—in some cases because of the area being insufficient, in others because I have felt no monument should be placed in the park, their form not being suitable for such adornment,—and in others because of a lack of appropriateness in placing an engineer in an isolated position with unsympathetic surroundings.

“For many years I have felt that small statues and monuments in Washington have been placed in a haphazard and thoughtless way about the city. All I think will agree that some plan should be devised by which they could be grouped, not as monotonous and detrimental adjuncts, but so that they would increase the interest and add to the beauty of buildings and landscape. We might group literary men around the Library, statesmen around the Capitol, warriors at the War College, scientific men in connection with the Smithsonian Institute, etc.

“While a plan of this kind might easily become disastrous, yet if competently designed as a part of the park in scale with the buildings there can be no question but that it would add to the interest and beauty of this city.

“This idea has been one of the controlling factors in my selection of Rawlins Park adjoining the Department of the Interior on the south, as the proper site for a memorial to an eminent engineer selected by his associates as one fitting to be commemorated in the Capital City, as this Department contains several of the important engineering

branches of the Government. I feel that important streets interrupted by the park and the Interior Department Building, the most imposing structure in the vicinity, should be recognized in the placing of this statue, and in the planting and the walks of the park. It will be acknowledged by those who have studied the question that the parks and their adornments have been treated in most cases as distinct entities, separated from the city and not a part of the city system. As I consider this method wrong for parks in the city intimately connected with the streets and buildings, I am recommending that Rawlins Square have its walks and planting and the memorial located so as to relate to such streets as New York Avenue and the new Interior Department Building, thus making it a harmonious part of its surroundings. While my first thought was to place the memorial on the south of the square on the axis of the Department, with an open view bounded by trees and some formal planting on lines following the central part of the building, this required a walk deflecting the line of New York Avenue which will, as the Riverside Park is completed, become one of the important drives of the city. I have recommended the carrying of the line of New York Avenue through the park, not as a street, but as an open view, with trees planted far enough apart to prevent the obstruction of this view in the future and with the grass, plants and walks on this axis while connecting the park with the system of the city streets also gives the most direct line for foot traffic.

"To connect the design with the Departmental Building I propose that the center of the park leading up to the memorial be confined to low rather formal planting following the lines of the center portion of the building, thus giving an open view by their future growth. I find by an examination of the trees in this park that the largest part are maples in the last stages of decay—lacking in form and beauty; others, while sound, are not of sufficient importance to prevent a replanting of the park to join it to its surroundings.

"As to the character of the memorial I recommend that it take the form of a fountain with large scale architectural features and forceful symbolic figures, typifying the joining of the Great Lakes, one of Alfred Noble's greatest achievements in the public service. I would also recommend that the representation of the engineer be confined to a low relief which will form a part of the composition. This will give the sculptor an opportunity to express his ideas in an ideal and poetic way and not confine him to the prosaic use of modern costume.

"I submit with this sketches in explanation of my recommendations of the relation of the park to the memorial and the suggested character of the memorial, not with the idea of binding the artist to a fixed design but simply to explain my report clearly.

"I have determined to recommend Mr. Paul Bartlett as the sculptor to do the work and would recommend leaving to him the selection of a design for architectural features.

"I recommend Mr. Bartlett because, while an American, he has an established reputation abroad and now has one of the most notable pieces of sculpture to be erected in this country in the pediment of



VIEW LOOKING DIRECTLY EAST.



VIEW LOOKING DIRECTLY WEST.



the Capitol, and full size models showing skill, taste, and good judgment.

"This work has caused him to live in Washington a large part of the past few years and has brought him in sympathy with the development of the city."

Site Adopted by Committee.—Upon receipt of this report the Committee held a meeting in Washington, going over the report and inspecting the site recommended by the adviser. The site appeared to them a particularly fortunate one, and was accepted without delay. Before formal adoption of these recommendations by the Committee the National Commission of Fine Arts had as a matter of courtesy reviewed the recommendations of the expert adviser as to location and general scheme, and found them acceptable as promising the best artistic results.

Sculptor Selected.—The question of selecting a satisfactory sculptor was then taken up. The expert adviser had recommended as his first choice Mr. Paul Bartlett but had also submitted two alternative names. Before accepting the adviser's recommendation the Committee inspected photographs of the executed works of many other sculptors than the three mentioned and later inspected some of Mr. Bartlett's executed works. The Commission of Fine Arts, in acceding to the request for an opinion as to the site, the type of memorial suggested, and the choice of a designer, had approved all as recommended by our architectural adviser; and in reviewing the sculptors suggested by him had stated that any selection from the list prepared would give the Society good results. Mr. Bartlett was selected and the offer of the commission made to him. He accepted, and chose as his architectural collaborators Messrs. Glenn Brown and Bedford Brown, the first of whom had acted as expert adviser to the Committee.

Design Proposed.—The sculptor and architects proceeded immediately upon their study of the problem and after preparation of many plans and studies and models, not only of the fountain itself but of the whole part treatment, finally evolved the design which is submitted herewith. They describe the result of their efforts as follows:

"The designs shown in the models for the Alfred Noble Memorial, while they commemorate the character and accomplishments of the great engineer, are regulated by the act of Congress fixing its character as a fountain and by its location in Rawlins Square, south of the new Interior Department Building.

"The center of the square, after thorough study, was considered the best location. The planting suggested for the memorial shows an open court facing the central portion of the new Interior Department Building, giving the most imposing view from this point, and binding it in with this Department in which the principal engineering

branches of the Government are housed. The diagonal lines direct for traffic are kept open, giving a diagonal view of the memorial, the second most imposing view. The oblong character of the fountain was adopted because it seemed to fit most logically with the form of the Square. It was determined that it should be made low and massive as befitting the solidity and permanence of engineering work. After studying and discarding many compositions based on the above ideas, the models shown here have been selected as combining best the features desired—a fountain befitting the site, and a memorial to an eminent engineer, symbolizing by its form and sculpture the character of the man and his life.

"The dominant architectural element is the large elliptical bowl, set on a solid base and flanked by the dominant sculptural element, two strong seated figures. The memorial will rise from a large basin of water, 37 ft. wide and 63 ft. long, surrounded by a wide stone coping, indicating the form of the composition, making it a part of the memorial, and for this reason dominating the water surface.

"The sculptural figures are intended to show the strong elements in Alfred Noble's character—thought in preparation, force in execution. Each figure will hold a scroll upon which will be carved an example of the work by which Alfred Noble is so well known and appreciated. Properly placed on the coping beneath the figures will be inserted descriptive lettering. Directly below the name on the base will be a large cartouche, on which there will be a relief portrait standing out prominently in the central position on each of the long sides of the memorial.

"The display as a fountain will be imposing and attractive. The water will rise in a large mass, falling into and overflowing from a small bowl into the large oval bowl. From the large bowl it will overflow into the great basin at the ground level. Water jets will flow into the large basin from the dolphins on the base. Minor jets are proposed on the long axis in the subordinate centers of the large basin. While this play of water will make the memorial attractive as a fountain, the sculptural and architectural composition will be an imposing memorial independent of the flow of water.

"To give the memorial distinction and avoid the combination of bronze and stone, which has become commonplace, it has been determined to use stone for both the architectural and sculptural features, so we can easily obtain harmony in color between the sculpture and architecture and emphasize and contrast important features of the design by different methods of tooling. Granite is the most desirable because of durability and the easy possibilities of contrasting methods of surface treatment. The color which is considered preferable is a green granite, like the Rockport granite. It is proposed to have the architectural portions fine cut rubbed or honed, while the sculptural work will be honed, combined with polishing high lights.

"As a statue in modern clothes looks crude and in a little while ridiculous, a realistic treatment has been avoided and the memorial will perpetuate the work and express the character of Alfred Noble, as by his mind and its products future generations will know and honor him.



VIEW LOOKING NORTHEAST ON THE AXIS OF NEW YORK AVENUE.



VIEW LOOKING SOUTHWEST ON THE AXIS OF NEW YORK AVENUE.

620

REPORT TO SUPERVISOR 1210-1000



REPORT TO SUPERVISOR 1210-1000



REPORT TO SUPERVISOR 1210-1000



VIEW LOOKING NORTHWEST ON THE AXIS OF VIRGINIA AVENUE.



VIEW LOOKING SOUTHEAST ON THE AXIS OF VIRGINIA AVENUE.

108

EXHIBIT 30 SIZE 4X6

1101 100007

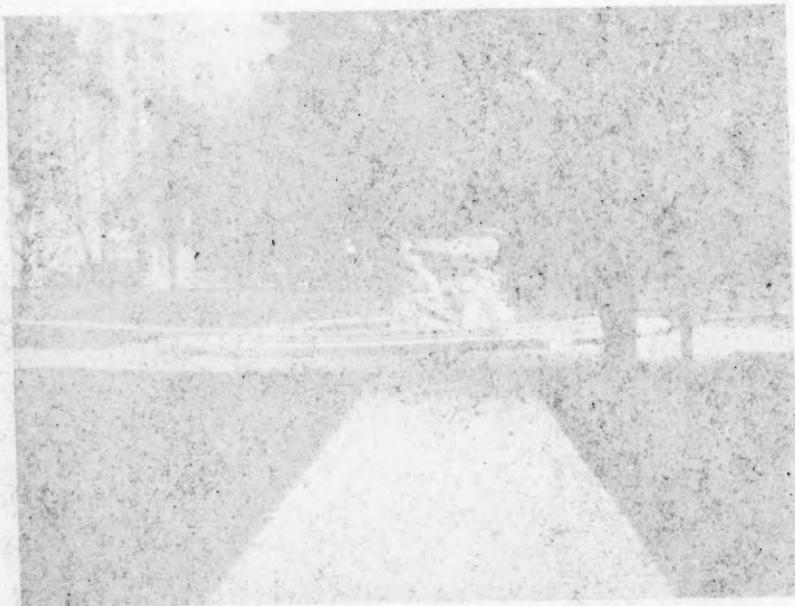


EXHIBIT 30 SIZE 4X6 NO TRANSMITTED ORIGINAL WHT



EXHIBIT 30 SIZE 4X6 NO TRANSMITTED ORIGINAL WHT

"To make the memorial individual and intimate a portrait relief, showing his physical features and expressing his inner spirit has been given the most prominent place in the composition."

Cost.—The Memorial as planned will cost \$45 000. This is for the main memorial composition itself. The United States Government at its own expense has already undertaken the development of the park, which will permit the proper setting for the fountain when erected in accordance with the artist's plans.

Approved by the Committee and the Fine Arts Commission.—It is believed that the design when executed will be dignified and beautiful, and an object of pride to the profession. It has met with the approval of the National Fine Arts Commission, under whose jurisdiction the decision as to the artistic character of memorials in the City of Washington has been placed by law, which also ensures a work of art of the first order.

Location Authorized by Law.—Through the efforts of your Committee, Congress, on May 8th, 1916, granted the following permission to the American Society of Civil Engineers:

"Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the Chief of Engineers, United States Army, be, and he is hereby authorized and directed to grant permission to the American Society of Civil Engineers for the erection on public grounds of the United States in the City of Washington, District of Columbia, other than those of the Capitol, the Library of Congress, and the White House, of a memorial fountain to Alfred Noble, a civil engineer of distinguished ability in connection with Government work, whose services have been of conspicuous benefit to the country: Provided, That the site chosen and the design of the memorial fountain shall be approved by the Commission of Fine Arts, and that the United States shall be put to no expense in or by the erection of the said memorial fountain: Provided further, That if the erection of this memorial fountain shall not be begun within three years from and after the passage of this resolution the permission granted may, in the discretion of the Chief of Engineers, be revoked at any time."

Every provision except the last one of this legislative enactment has been complied with. If work is not undertaken within three years the permission to erect this memorial may be withdrawn, and the site be made available for the erection of some other memorial for which there is always great pressure.

Present Condition of Work.—This is shown by the illustrations accompanying this report, which are from photographs of a full size

model of the Memorial, made in plaster. The United States Government has already graded the park and built permanent cement walks as planned by the architect, and the planting of trees and shrubbery will follow at the proper time. The Memorial in plaster will last until it can be replaced by permanent granite. In the meantime, engineers, and the public generally, have the opportunity of judging the quality and appropriateness of the design, which will be closely followed in granite, subject to minor changes which may be proposed by the sculptor or the National Fine Arts Commission.

Time.—The time required for the construction of a work of art is disappointing to engineers, accustomed to regard time as an essential factor in construction. Your Committee has sometimes chafed under what appeared to be unnecessary delays, but it believes we have moved as speedily as in the case of other monuments in the City of Washington, and having reached a satisfactory conclusion as to the size and character of the Memorial, it feels that, on looking backward, it has accomplished as much progress as could be expected under the conditions which have prevailed in the three years since it was appointed. If the conditions were favorable we would now be asking for subscriptions and proceeding with the permanent work. All Members know without explanation from the Committee that the present is not a good time to invite engineers to subscribe, nor to attempt the quarrying, the transportation and the carving and erection of the granite work. When the right time comes, and we devoutly hope it is not far away, we will be ready to proceed with all reasonable progress. At present we ask engineers to keep in mind the wish to finish this Memorial designed to honor the profession as it was represented by Alfred Noble. Your Committee is ready at the return of normal conditions to complete its task in a manner that we believe will be gratifying to the profession.

Respectfully submitted,

ONWARD BATES

SAMUEL REA

SAMUEL H. HEDGES

F. H. NEWELL

W. W. HARTS

CHAS. WARREN HUNT

The Committee has been unable to secure the signature of Maj. Hugh L. Cooper, who is in the Government service "somewhere in France."—Secretary.

Civil Engineers for War Service

The United States Government is making demands constantly for civil engineers for service in the United States and abroad, and though hundreds are now in the service, as commissioned officers or civilians, more are needed, and will still be needed after the war ends, to carry on reconstruction and improvement operations on a large scale, in the countries where the armed conflicts have been waged.

One of the functions of the Engineering Council, recently organized by the four Founder Societies, is to collect and classify information about engineers in all branches of the profession, and to aid the Government in securing the right men as needed. This information is being assembled, and is to be kept in a central place, probably the Engineering Societies Building in New York City.

The American Engineering Service Committee, appointed by the Engineering Council for the purpose of obtaining information about engineers, has already been enabled to aid the Government in many cases.

Some of the engineering societies have been collecting information by sending question sheets to their members. So many of such question sheets have been sent out by various organizations that they have become a burden to not a few engineers. Therefore, at a recent meeting of the Board of Direction, it was voted that, instead of sending a question form to all members of this Society, this notice should be printed in the *Proceedings*, inviting all those interested to send to the Secretary specific information concerning their willingness to accept Government service at home or abroad, their preferred specialties, their fitness and experience therein, and approximately the rate of remuneration that would be accepted. For convenience of use, all statements received in response to this notice must be classified and indexed. It will expedite this work if those who respond to this notice will use, as far as practicable, the designations of the brief classification printed below; if these are wholly inappropriate in certain unusual cases, other designations, of course, may be used.

Pending the formation of a list of civil engineers available for war service from the responses to this notice, the representative of the American Society of Civil Engineers on the American Engineering Service Committee, with the assistance of a number of members residing at focal points of engineering activity, has prepared a partial list of "Civil Engineer Specialists for War" who might be available for various kinds of service, especially men of experience who could give advice in different problems or suggest names of men suited to subordinate positions. An important object of this notice is to inform

the membership at large of the existence of this partial list, and the desire to create a more complete list, so that all who wish to be considered for Government service may have their names on file in a place to which inquiries for engineers will be directed. Of course, it cannot be guaranteed that such filing of one's name will secure a Government engagement, or even that it will surely bring some coveted opportunity. It may help both the individual and the Government.

Classification

To be Used in Connection with

Listing Civil Engineers for War Service

NOTE.—In replying, members may use the letters and figures in designating the special work for which they are qualified.

A.—Construction Work, Contracting

- 1 Earthwork
- 2 Quarrying
- 3 Rock excavation
- 4 Highways
- 5 Railroads
- 6 Steel bridges
- 7 Steel frame buildings
- 8 Reinforced concrete buildings and
- 9 Concrete and stone masonry
- 10 Water-works
- 11 Sewerage

B.—Structural Engineering

- 1 Concrete and stone masonry
- 2 Reinforced concrete
- 3 Timber construction
- 4 Arches:—concrete, stone, brick, steel, iron
- 5 Trusses, girders, building frames, roofs
- 6 Movable bridges
- 7 Cantilever and suspension bridges, viaducts
- 8 Bridge-shop practice, shop inspection
- 9 Bridge erection, falsework, equipment
- 10 Bridge painting
- 11 Coal storage plants
- 12 Grain elevators
- 13 Factories and mill buildings
- 14 Fire prevention and protection

C.—Foundations

- 1 Underpinning, shoring
- 2 Timber piles
- 3 Concrete piles
- 4 Metal piles
- 5 Pneumatic and open caissons

D.—Surveying

- 1 Topographic surveying
- 2 Geodetic surveying, triangulation
- 3 Diamond and shot drilling, washing, boring

E.—Railroads

- 1 Location
- 2 Construction, and maintenance of permanent way
- 3 Yards and terminals
- 4 Signals and signaling
- 5 Traffic management
- 6 Mountain railways
- 7 Aerial tramways
- 8 Industrial railways

F.—Street Railways

- 1 Location
- 2 Construction of track, maintenance
- 3 Electrolysis, leakage

G.—Municipal Planning

- 1 City and town planning
- 2 Industrial towns

H.—Highways

- 1 Location
- 2 Earth and sand-clay roads
- 3 Water-bound surfacing
- 4 Bituminous pavements and surfaces
- 5 Cement concrete pavements
- 6 Brick and block pavements (stone, wood, asphalt)
- 7 Maintenance

I.—Hydrology, Hydraulics, Dams

- 1 Hydrology, water resources
- 2 Earthen, hydraulic-fill, rock-fill dams
- 3 Timber dams
- 4 Masonry, reinforced concrete dams
- 5 Movable dams

J.—Waterways

- 1 Dredges and dredging
- 2 Coast erosion and protection
- 3 Breakwaters and jetties
- 4 Harbors, roadsteads, and anchorages
- 5 Bulkheads, dock and quay walls, docks and piers, wharves
- 6 Canals
- 7 River regulation and canalization

K.—Water-works

- 1 Purification of water
- 2 Aqueducts, conduits, open channels
- 3 Pumping plants
- 4 Stand-pipes and tanks
- 5 Mains and services
- 6 Rural and isolated water supply

L.—Water Power

- 1 Water power, hydro-electric plants

M.—Sanitation

- 1 Sewerage systems
- 2 Sewage disposal
- 3 Camp sanitation
- 4 Refuse disposal
- 5 Industrial and factory sanitation

N.—Tunnels and Shafts

- 1 Shaft sinking
- 2 Tunneling and drifting
- 3 Timbering, metal supports
- 4 Masonry lining, grouting
- 5 Drainage, unwatering

Report of the Secretary on the Society's New Headquarters

OCTOBER 5TH, 1917.

To THE BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS:

The undersigned respectfully reports on various matters which, as Secretary of the Society, and as a member of the Building Committee of the U. E. S., have been under his care since building operations were undertaken last year.

The three stories added to the United Engineering Building had to be carried on steel columns running through the building, inasmuch as the walls were not built to carry additional load. This necessitated a preliminary contract for this work. The Wells Construction Company carried this work out on a percentage basis, the approximate cost being \$60 000.

Due to various causes, it was not possible to get plans and specifications ready so that the second contract could be put out for competitive bidding, and the prices of all material were advancing so rapidly that an agreement was entered into with the Wells Construction Company, after careful figuring, on the basis of the then prices (November, 1916) at an upset figure including his percentage of 7%. We were fortunate in being able to secure the steel with only about 30 days' delay in delivery.

The original estimate of the cost of the addition at the time the matter was first proposed was about \$210 000, but, in order to cover contingencies, \$225 000 was considered ample to carry out the work. The American Society of Civil Engineers agreed to pay the cost of the building, not to exceed \$250 000.

The building will cost \$300 000, the additional \$50 000 being met by assessments on the four Founder Societies, so that the total amount to be paid by this Society will be \$262 500.

All of this has been paid with the exception of the additional assessment of \$12 500.

It is a matter of congratulation that this work has been carried to completion without any serious accident of any kind, and without very serious inconvenience to the many societies occupying the building.

The lay-out of the floors to be occupied by this Society was made by the undersigned with a view to utilizing every available foot of space and to secure good light. This was the more necessary, inasmuch as the area of these two floors is much less than that of the lower floors.

Briefly, the Society will occupy the entire 15th floor, and about two-thirds of the 16th or top floor. In all there are 11 main rooms. On the 15th floor there are:

(1) The office of the Secretary, entrance to which is at the right of the elevators.

(Statements (A) and (B) follow on the next page.)

(2) The Reading Room, directly opposite the elevator, the entrance to which will be the main entrance to the Society rooms. This room is 51 by 26 ft., and looks out over Bryant Park to the north. It is paneled in oak, and when used by our members, in connection with the Library, will, it is believed, practically take the place of the present Reading Room in 57th Street.

(3) The Board Room. This room, which is 43 by 24 ft., is on the south side of the building, directly opposite the Reading Room, a 6-ft. hallway separating them. This room is paneled with mahogany, and the furniture for it, which has been specially designed, is also of mahogany, and consists of 4 tables and 30 chairs. The tables are designed so that they can be placed together making a table 24 by 6 ft., or can be separated and used as units 6 by 6 ft., and when necessary can be made into tables 6 by 3 ft. to set against the wall and take up very little room. In the partitions between these rooms and the hallway, two 8-ft. openings opposite each other, with sliding doors, have been arranged, so that the two rooms can be thrown together, practically forming one large room averaging 57 by 47 ft.

(4) General Office. A large room covering the east side of the building 59 by 37 ft. Here will be located the general office force. A service stairway, which will practically be a private stairs for this Society, gives access to the 16th floor, where, on the east side of the Building, there are four small offices, as follows: (5) Rest Room for women, (6) For Bookkeeper, (7) Editorial Department, (8) Applications Department.

Three other large rooms are available for Committee rooms, or whatever use may develop in the future. They are: (9) 24 by 20 ft., (10) 22 by 24 ft., (11) 36 by 23 ft., these figures being approximate.

A doorway in the hall separates that part of the floor to be used by the Society from 3 rooms which are available for renting by the U. E. S., and to which access is obtained through the elevator and hallway without passing through the quarters of the Society.

In the budget of last year an item of \$20 000 was placed to cover the necessary furniture for the new quarters, and subsequently the undersigned was authorized to contract for the paneling of the Reading Room and Board Room, the estimated cost of which was \$5 000, not including architect's fee, the total extra appropriation being \$25 000.

It has been found that a great deal of the furniture, which has been in use for just 20 years, is perfectly good, if renovated; in fact, it is doubtful if it would be possible to secure such excellent material at the present time, and it is certain that the expense would be very great. All the furniture in our present Reading Room has been entirely done over, and will be used in the new Reading Room.

In 1897 we had 8 rugs made; these have been in constant use for 20 years, and they are still in very good condition. To give some idea of the changes in price, a large rug which was made specially for use in our Reading Room, and for which the Society paid \$450, has been stated by one rug man to be worth about \$2 000.

A few extra desks and chairs have been purchased to replace some which were not fit to renovate. The total approximate amount which will be spent for paneling and furniture, including metal shelving, is \$13 222, or a little more than half the appropriation.

Attached to this report are:

(A) A statement of the financial condition of the Society on October 1st, and of the obligations which it will have to meet to December 1st, which shows a total estimated deficit of \$26 086.71 on December 1st, 1917.

(B) Statement of the cost of furniture.

The actual building operations would have been very nearly finished about the first of October, but the paneling in the two large rooms, which is not part of the original contract, was undertaken as special work for this Society, which would necessarily delay our moving in for some time. In view of these circumstances, the Secretary agreed with the President of the U. E. S. that all interest charges on amounts advanced by the Society (amounting to about \$4 891) should cease on October 1st, and that the Society should begin the payment of rental on November 1st. This practically gave us a month in which to get settled in our new quarters. I hope the members of the Board will be able to visit the new building during the day.

Inasmuch as a final draft of \$15 000 on the mortgage will carry the Society through very well for its ordinary expenses and the payments of all bills for furniture and moving, until after the first of December, when it will be in funds, I took up the question of the date of payment of the \$12 500 still due the U. E. S. with Mr. Chas. F. Rand, President, U. E. S., and he stated to me that it would be satisfactory if this payment were deferred to December at some date prior to the 10th, and I recommend that this action be taken, because if we do not draw the additional \$12 500, it can then easily be spared out of current funds, and our total mortgage will be only \$150 000, and, inasmuch as the total cost of building, extra work, furniture and moving, will bring the total amount to be expended by the Society up to approximately \$276 000, \$126 000 of it will have been paid out of current funds.

Respectfully submitted,

CHAS. WARREN HUNT,

Secretary.

(Statements (A) and (B) follow on the next page.)

(A)

STATEMENT RE FINANCIAL CONDITIONS
OF AMERICAN SOCIETY OF CIVIL ENGINEERS
Oct. 1st to Dec. 1st, 1917.

Paid to United Eng. Society (including interest of
\$4 891.67)..... \$250 891.67
United Engineering assessment..... 250 000.00

Amount due Am. Soc. of C. E. from U. E. S. Oct. 1st, 1917. \$891.67
Balance in bank, Oct. 1st, 1917..... \$6 594.97
Receipts Oct. 1st, 1917, to Dec. 1st, 1917 (on basis of 1916)..... 9 210.00

\$15 804.97

Ordinary disbursements, Oct. 1st to Dec. 1st, 1917 (on basis of 1916)..... 17 061.25
Deficit (on account of current expenditures)..... \$1 256.28
To be provided for:
Furniture, rugs, etc. (as per attached list)..... \$7 222.10
Paneling 5 500.00
Moving 500.00
One-quarter assessment U. E. S. (\$50 000)..... 12 500.00 \$26 978.38
Total deficit Dec. 1st, 1917 (estimated at)..... \$26 086.71
(Cash receipts Dec. 1st to Dec. 10th, 1916).... \$13 548.00

(B)

FURNITURE ACCOUNT.

Linoleum (estimate)..... \$554.00
Mahogany furniture, Board Room..... 2 800.00
Rug for Board Room..... 832.00
Renovating old furniture (estimate)..... 563.00
Drawing Board, 25.00
Furniture from Quick and McKenna..... 672.55
Furniture from Stanton M. Child:
 Stationery cabinet..... \$56.00
 Lockers 160.00 216.00
 Metal shelving 700.00
 Cleaning of rugs 103.00
 Furniture for Rest Room (estimate)..... 100.00

\$6 565.55

Add 10% for contingencies..... 656.55

(\$7 222.10)

**Report of the Library Committee,
American Society of Civil Engineers.**

**"To THE BOARD OF DIRECTION,
AMERICAN SOCIETY OF CIVIL ENGINEERS,**

"October 2, 1917.

"The Library Committee's duties and responsibilities have been much curtailed by various actions of the Board and by events with which the Board is familiar, as compared with the requirements of the Constitution. Nevertheless, the Committee believes that a brief report is due from it at this time.

"The books and pamphlets of the Society's library which were not duplicates of those already in the United Engineering Library have been moved to the latter library and shelved temporarily, pending the completion of the changes in the library space in the Engineering Societies' Building. The work of comparing the libraries to sort out the duplicates, and the moving of the 67 000 accessions from the Society House to the U. E. S. Library and placing them on the shelves ready for continuous use, while paid for by the U. E. S., was carried out under the direction of the Secretary of this Society.

"Of the duplicates, 22 000 have been disposed of, as directed by the Board, by delivering them to the Cleveland Association of Members of the American Society of Civil Engineers. They have been shipped to Cleveland and placed for use and safekeeping in the library of the Cleveland Engineering Society.

"The book-stacks in the Society's library are being dismantled and removed to the United Engineering Library, where they will be re-erected as speedily as practicable. Certain reference books and the periodicals have been reserved for the reading-room in the Society's new quarters, to which they will be taken before the end of this month.

"Removal of the former roof of the Engineering Societies' Building and other operations immediately above the United Engineering Library necessitated the closing of the library for two periods of about one week each during the summer. Excepting these periods and the brief time occupied in moving from 57th Street, the books have been constantly accessible for use.

"By resolution of the Board of Direction, the ownership of that portion of the Society's library which was moved into the United Engineering Library, was formally tendered the United Engineering Society, but up to the date of this report, no formal acceptance had been received.

"No progress has been made on the physical part of the work of combining the four collections of books which now constitute the United Engineering Library, because of conditions created by the building operations and the fact that the much needed additional space and shelving have not been ready. Nevertheless, this matter, including the necessary recataloguing and indexing of the books, has been receiving the careful attention of Dr. Craver, the Director of the Library.

"Other matters affecting the library and the House of the Society are covered by the report of the Secretary.

"Respectfully submitted,

"GEORGE A. HARWOOD,

ALFRED D. FLINN,

LEWIS D. RIGHTS,

"Chairman."

J. V. DAVIES,

CHARLES WARREN HUNT,

ALFRED D. FLINN,

"Library Committee."

**Resolutions Adopted by the
Executive Committee of the Board of Direction of the
American Society of Civil Engineers,
November 1st, 1917.**

Whereas, Congress has passed an act known as the War Revenue Act of 1917; and

Whereas, Under Section 200 of said act it is stated "The terms 'trade' and 'business' include professions and occupations"; and

Whereas, Section 209 of said act states "That in the case of a trade or business having no invested capital or not more than a nominal capital there shall be levied, assessed, collected, and paid, in addition to the taxes under existing law and under this act, in lieu of the tax imposed by section two hundred and one, a tax equivalent to eight per centum of the net income of such trade or business, in excess of the following deductions: in the case of a domestic corporation, \$3 000, and in the case of a domestic partnership, or a citizen or resident of the United States, \$6 000, in the case of all other trades or business, no deduction"; and

Whereas, In most cases the professional man's earnings constitute his sole income, from which must be derived the capital which will yield a competency for himself and family, and inasmuch as these earnings are subject to the established income tax, including super-taxes, this same income should not be taxed further as if it were excess profits, when as a matter of fact it is not excess profits; and

Whereas, It is discriminatory and unjust to tax earned income at a higher rate than unearned income; and

Whereas, In other countries where incomes are taxed the tax is heavier on unearned than on earned incomes, thus encouraging industry and thrift;

Resolved, That in the opinion of the Executive Committee of the Board of Direction of the American Society of Civil Engineers, the provisions in Sections 200 and 209, hereinabove quoted, should be repealed because they are discriminatory and unjust.

Resolved, That the Secretary be and he is hereby directed to publish the above in *Proceedings*, and to send copies to the other National Societies, and to the various Associations of Members, urging similar action. Also, to forward copies to Hon. F. M. Simmons, Chairman of the Committee on Finance of the Senate, and Hon. Claude Kitchin, Chairman of the Ways and Means Committee of the House, requesting the repeal of the above-mentioned provisions at the next session of Congress. Also, to urge each member of the Society to act individually by communicating directly with his representatives in Congress along similar lines.

Remission of Dues

The Secretary has been authorized to inform the membership that remission of dues cannot be made in advance, but that all members of the Society who enter the United States Military Service will be carried on the rolls, if they so request, until the War is over.

**Report of Secretary to the Engineering Foundation
for the Year, September, 1916-1917.**

"20 September 1917.

"To THE ENGINEERING FOUNDATION BOARD

"GENTLEMEN: As this meeting terminates the year's agreement under which the Engineering Foundation has appropriated its income to the National Research Council, a brief summary of what has been accomplished seems called for.

"The Research Council was organized on the 19 September 1916. The Executive Committee was appointed at that meeting; since that date two other meetings of the Council have been held, one in Boston on 13-14 November, and the other in Washington on 19 April. During the intervals between the meetings of the Research Council, the Executive Committee has conducted all of the business of the Council. There have been twenty-nine meetings of the Executive Committee, thirteen in New York up to the first of May, fifteen in Washington subsequently, and one in Boston.

"The meetings in New York were devoted to the organization of the Research Council and especially to appointment of Committees. At the outset, the Council had no very clear idea of the way in which it was to organize; there were several other groups of scientific men at work, among them, the Research Committee of the American Association for the Advancement of Science and the Engineering Committee of the Advisory Commission to the Council of National Defense. Time was spent in straightening out these two principal complications, both of which were satisfactorily adjusted. The upshot of these negotiations is to leave the Research Council as the only representative, national body of research men, assisting the Government.

"During the period up to May, the Executive Committee in New York selected carefully the personnel of some twenty-five principal committees, and of a large number of sub-committees; so carefully were these chosen that of the entire number, several hundred, there have been only one or two declinations.

"Some of the important steps in the development of the Research Council are the establishment of the Military Section, composed of the Members of the Council connected with the Government and resident in Washington. This Section put the Research Council into close contact with the most important officials of the Army and Navy. From it has grown the Washington Office of the Council, and the recognition of the Research Council as the 'Department of Science and Research of the Council of National Defense,' and the establishment of the Washington Office after the Council of National Defense had officially recognized the Research Council. About this time Dr.

Hale, Chairman of the Council, appointed Dr. Millikan to be Vice-Chairman to represent the Council in Washington, and Dr. Millikan has since then been in charge of the work of the Council.

"At the request of the Secretary, Dr. Millikan has prepared a brief report of some of the work of the Research Council during its first year, which is appended to this report. It shows that the Research Council has been active in much of the important work under way in our preparations for war, and that it has rendered effective services to the Government.

"During the early stages much discussion took place regarding the formation of an Engineering Committee of the Research Council—how it should best be formed and what scope it should have. In April, this was worked out by the Chairman, Mr. Dunn, most satisfactorily with the coöperation of the four principal Engineering Societies. This committee has since been one of the most active of the Research Council, under the efficient handling of Dr. Durand, who came on from California to act as head of the office in Washington and under whom the work of the Engineering Committee has been conducted. The work of the Secretary for the last few months has been principally with Dr. Durand and this Committee.

"The funds of the Engineering Foundation have been spent in general administrative work, that is to say, in the payment of traveling expenses, expenses of committees, stationery, printing, salaries, etc., of this office, principally. Money has not been spent directly in the solution of scientific problems.

"There is appended a brief financial statement, showing the operation of the Foundation for the year, resulting in a surplus of \$4 775, which added to the surplus of \$11 670 on 16 September 1916, makes a surplus at this date of \$16 445. Against this the only liability is \$1 000; and the Foundation has in this office furniture and fittings costing \$838.

"The Engineering Foundation at its meeting in January approved a budget for the year amounting to \$12 510 for the Research Council; subsequently, it authorized \$400 more for furniture, in all, \$12 910. The total amount disbursed on account of the Research Council to the 20 September 1917, is \$10 445—that is, \$2 465 less than the amount appropriated.

"The Foundation, in July, 1916, made an appropriation of \$1 000 to Messrs. Marx and Durand of California for researches on wear of gears. The Secretary has recently written to Prof. Marx asking whether it would be possible, by the payment of expenses already incurred, to release the Foundation from subsequent expenses in this matter. An answer was requested by 20 September, but none has yet been received. The Foundation may be released from the obligation; but, for the present, it should be assumed that this \$1 000 is tied up, leaving available for other purposes of the Foundation a surplus of \$15 445.

"The Engineering Foundation has been an important factor in the formation of the National Research Council and in the guidance of its early life. It is, I think, safe to say, had it not been for the assistance given by the Foundation to the Research Council, that when its opportunity came to be of service to the country it would

not have been ready to act, and would not have been authorized as the 'Department of Science and Research of the Council of National Defense.'

"The Research Council no longer requires the financial assistance of the Foundation, which is, therefore, free to devote its resources to other work.

"Faithfully yours,

"CARY T. HUTCHINSON,

"Secretary."

FINANCIAL STATEMENT OF ENGINEERING FOUNDATION

FOR THE YEAR, 29 SEPTEMBER 1916-1917.

"EXPENDITURES

"Account.	Amount.
"Salary of Secretary.....	\$5 000
Traveling expenses.....	930
Current office expenses (ex stationery).....	2 133
Office furniture and fittings.....	838
Stationery (New York and Washington).....	1 034
Committee appropriations	510
"Total expenditures	\$10 445

"INCOME FOR THE YEAR

From securities (including bank interest)	10 220
Mr. Swasey's gift.....	5 000

"Total income	15 220
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"Surplus for the year	
on 16 September 1916.....	4 775
on 20 September 1917.....	11 670

"BUDGET

"Authorized for the Research Council.....	12 510
"additional (for furniture).....	400

Total budget	12 910
Expenditures (above)	10 445

Remainder, not used.....	2 465
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"THE ADAMS' FUND

"Gift of Mr. Adams.....	5 000
Disbursements to 20 September 1917.....	1 597

"Balance, 20 September 1917.....	3 403
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"CARY T. HUTCHINSON,
"20 September 1917" "Secretary."

DR. MILLIKAN'S LETTER TO DR. HUTCHINSON

"September 7, 1917.

"DR. CARY T. HUTCHINSON, SECRETARY,
THE ENGINEERING FOUNDATION,
33 WEST 39TH STREET, NEW YORK.

"DEAR DR. HUTCHINSON: The following is a statement of some of the work of the National Research Council, condensed with difficulty on account of the great variety and scope of the Council's activities.

"All of the work of the Research Council that touches upon Army or Navy problems is carried on with the advice, co-operation, or control, as the case may be, of the representatives of the various Departments of the Army or Navy under which such work comes.

"The Council has co-operated in the establishment and organization of the submarine experimental work at Nahant and has also established a very active submarine station at New London, another at San Pedro, California, and has been instrumental in the organization of groups working at New York, Chicago, and Madison, Wisconsin.

"There has resulted a great practical advance in the art of submarine detection which it is not desirable to go into further.

"The Physics Committee of the Council has distributed to various groups twenty or more large problems in physics, which are being actively worked upon and some of which have already been solved. Among the latter are the location of aircraft by sound, the development of fire control for anti-aircraft guns, telephoning between airplanes, protection of balloons from ignition by static charges, and the development of new and improved methods of measuring muzzle velocities.

"The Chief Officer of the Signal Corps of the Army has asked the Research Council to act as the Division of Science and Research of the Signal Corps, and in this capacity the Council has organized a Sound Ranging Service in the Signal Corps, a new Meteorological Service in the Signal Corps, and is now drawing specifications for scientific instruments to be used on airplanes. It has sent a dozen of the best physicists in the country to France to aid the American Expeditionary Forces with their scientific knowledge, and is selecting a personnel of several hundred men who are to be engaged in the scientific services of the Army and Navy.

"The Chemistry Committee has perfected an elaborate organization for the handling of all the chemical problems which arise in the Army and in the Navy, and it has distributed some 150 chemical problems which are being attacked in the chemical laboratories of the country.

"The Psychology Committee has presented to the Secretary of War and the Adjutant General a vast program for the selection of officers for the Army from officers' reserve camps and for the classification of drafted men. In fact it has called in most of the best known psychologists of the country and has organized them and employment experts into a large group in whose hands the War Department has

placed the largest responsibilities regarding the examination and selection of men.

"The Medical Committee has enlisted the services of a large number of medical men of the country both in medical research problems and in the regular work of the Sanitary Corps of the Army.

"The Engineering Committee has contributed in no small degree to the development of devices for the protection of ships from submarines. It has organized a large group which are now working on the development of steel protective devices for use of the soldiers at the front, and through co-operation with the National Advisory Committee for Aeronautics it has carried on extensive and important researches in the development of airplanes and airplane engines.

"Turning to the work of the special committees of the Council, the Nitrate Committee has made an elaborate study and report which has been made the basis for the expenditure by the Government of large sums of money upon the erection of a nitrate plant.

"The Gas Warfare Committee has had for six months 120 chemists working on the problems of gas warfare and the results already attained have been of the utmost importance—so important that the Army and Navy have placed large appropriations at the disposal of this Committee for its researches.

"The Optical Glass Committee, by taking from the research laboratories like the Geophysical Laboratory, a dozen more silicate chemists and putting them directly in the works of the Bausch and Lomb Company and the Pittsburgh Plate Glass Company, has in six months' time developed in America the production of optical glass from nothing up to 20 000 pounds a month and in two months more this figure will have been multiplied two or three fold.

"The Psychiatry Committee has established abroad a Laboratory for the study of shell shock.

"The Foreign Service Committee, which the Council sent abroad at once upon the outbreak of the war, was wholly responsible for the sending back to this country of a French, English and Italian Scientific Mission, which brought with them the contributions which science had made to the war, both in the matter of instruments and methods, and unquestionably saved months of time in putting the United States abreast of the European situation, as regards modern scientific methods in warfare. It is difficult to overestimate the stimulus to American participation in the war which resulted directly from the action of the Research Council in sending abroad at once this Foreign Service Committee composed of seven of the best scientists in the country.

"These are a few of the results which have followed from the assistance which the Engineering Foundation gave in the bringing into being of the National Research Council. It is hoped that they are only a small part of the results which will have been attained by the end of the second year of its existence.

"Sincerely yours,
R. A. MILLIKAN,
Vice-Chairman."

**RECIPROCAL RESOLUTIONS EXCHANGED BETWEEN
THE ENGINEERING FOUNDATION AND NATIONAL RESEARCH COUNCIL**

From the National Research Council to The Engineering Foundation:

"As the year for which the co-operative arrangement was made between the Engineering Foundation and the National Research Council will soon expire, the Research Council wishes again to record its high appreciation of the liberal financial and personal assistance which the Foundation and its members have afforded in the organization and support of the work of the Council in this first year of existence. It seems exceedingly desirable to maintain close relations between engineers and research workers which the Research Council has for the first time succeeded in establishing. Accordingly, the Council wishes to express the hope that it may be practicable to continue some effective form of co-operation between the two bodies, and it would be glad to appoint representatives to consider this matter with men designated by the Foundation."

From The Engineering Foundation to the National Research Council:

"Resolved, That The Engineering Foundation receives with pleasure the resolution of the National Research Council expressing appreciation of the financial and personal assistance rendered to the organization and work of the Council during the past year. Reciprocating the Council's desire for the maintenance of close relations between workers in science and in engineering, the Foundation hereby declares that it will be its policy to continue the co-operation between the two bodies in all practicable ways that may be now, or may become, mutually available, such ways consisting of the interchange of helpful suggestions, advice, information, office representation and similar facilities, and in addition a recognition of community of purpose that shall promote in the field of engineering research increasingly intimate relations between engineering and science.

"The reciprocal designation of the Secretary of each of the bodies as an assistant Secretary of the other for the purpose of enabling both bodies to have offices in both New York and Washington is favorably regarded, and the Foundation welcomes and gladly accepts the offered assistance of the Research Council in the national co-relation of the engineering research work of the Foundation to which the Foundation's resources will be devoted."

The Engineering Societies Club of Hawaii

The following letter from the Secretary of the Engineering Societies Club of Hawaii is presented for the information of the membership.

"HONOLULU, HAWAII, October 9th, 1917.

"MR. CHARLES WARREN HUNT,
Secretary of the American Society of Civil Engineers.

"DEAR SIR: Kindly be informed that The Engineering Societies Club of Hawaii has been established, and I am herewith enclosing a

copy of the 'Constitution and By-Laws' which will give you the purposes of this Club. As you will note it is an amalgamation of the:

American Society of Civil Engineers,
American Society of Mechanical Engineers,
American Institute of Mining Engineers,
American Society of Naval Engineers,
American Railway Engineering Association,
American Society for Testing Materials,

a member of any of these national organizations being eligible to become a member of the Club.

"The main purpose of this Club is for the entertainment of visitors from the various National organizations while in Honolulu and the Hawaiian Islands. We therefore request that the various national organizations post notices of the existence of this Club in their various magazines and transactions so that all members of these national organizations will know that such a Club exists and the privileges extended to them while visiting Honolulu.

"We trust that the various Secretaries who are aware of a proposed visit to the Islands by any one of its members would communicate with the Secretary of our Club so that he may be taken care of in the proper manner. We would wish also that any member proposing to visit Honolulu or the Islands would make it a point to announce himself to the Secretary of The Engineering Societies Club of Hawaii, so that the various members may get into communication with him.

"Trusting that due notice will be given the various members of your national organizations of the existence of this Club, and its purposes, thanking you,

"Very truly yours,

"THE ENGINEERING SOCIETIES CLUB OF HAWAII,

"By E. F. CYKLER,

"Secretary."

ANNOUNCEMENTS

The Reading Room of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

FUTURE MEETINGS

December 5th, 1917.—8.30 P. M.—Chas. Warren Hunt, Sec., Am. Soc. C. E., will address the meeting on Society matters of general interest.

December 19th, 1917.—8.30 P. M.—At this meeting a paper entitled "Construction Problems of the Manhattan-Bronx and Lexington Avenue Subway Junction and Queensborough Tunnel Connections," by George Perrine, M. Am. Soc. C. E., will be presented for discussion. This paper is printed in this number of *Proceedings*.

ANNUAL MEETING

The Sixty-fifth Annual Meeting will be held at the Headquarters of the Society, 33 West 39th Street, on Wednesday and Thursday, January 16th and 17th, 1918. The Business Meeting will be called to order at 10 o'clock on Wednesday morning. The Annual Reports will be presented, Officers for the ensuing year elected, members of the Nominating Committee appointed, Reports of Special Committees presented for discussion, and other business transacted.

SEARCHES IN THE LIBRARY

In January, 1902, the Secretary was authorized to make searches in the Library, upon request, and to charge therefor the actual cost to the Society for the extra work required. Since that time many searches have been made, and bibliographies and other information on special subjects furnished.

The resulting satisfaction, to the members who have made use of the resources of the Society in this manner, has been expressed frequently, and leaves little doubt that if it were generally known to the membership that such work would be undertaken, many would avail themselves of it.

The cost is trifling compared with the value of the time of an engineer who looks up such matters himself, and the work can be performed quite as well, and much more quickly, by persons familiar with the Library.

In asking that such work be undertaken, members should specify clearly the subject to be covered, and whether references to general books only are desired, or whether a complete bibliography, involving search through periodical literature, is desired.

It sometimes happens that references are found which are not readily accessible to the person for whom the search is made. In that case the material may be reproduced by photography, and this can be done for members at the cost of the work to the Society, which is small. This method is particularly useful when there are drawings or figures in the text which would be very expensive to reproduce by hand.

A list of 989 bibliographies made in the Library, giving the cost of each, was published in Vol. LXXX of *Transactions*.

Since October 1st, 1916, the Library of the American Society of Civil Engineers has ceased to exist, as such, having been merged with the Libraries of the Mining, Mechanical, and Electrical Engineers, and become a part of the Library of the United Engineering Society. There were 67 000 accessions, which were not duplicates, turned over to that Library.

Hereafter, therefore, requests for searches should be addressed to the Librarian, United Engineering Society, 29 West 39th Street, New York City.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and on these oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 429 of the August, 1913, *Proceedings*.

**LOCAL ASSOCIATIONS OF MEMBERS
OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS****San Francisco Association, Organized 1905.**

J. D. Galloway, President; E. T. Thurston, Secretary-Treasurer, 57 Post Street, San Francisco, Cal.

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 P. M., at the Palace Hotel, on the third Tuesday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.30 P. M., every Wednesday, and the place of meeting may be ascertained by communicating with the Secretary.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

(Abstract of Minutes of Meeting)

October 16th, 1917.—The meeting was called to order at the Palace Hotel; President Galloway in the chair; Nathan A. Bowers, Secretary, *pro tem.*; and present, also, 53 members and guests.

The Entertainment Committee provided several reels of moving pictures, three of which were supplied by the Trojan Powder Company and the Oakland Paving Company.

Messrs. Newman, Cleary, and Chew were appointed as the Entertainment Committee for the Annual Meeting in December.

For the Committee on Military Affairs, President Galloway reported that the Committee had completed its work and had adjourned *sine die*. Of the \$750 contributed to this Committee for its work, about \$135 was not used, of which \$47 had been contributed to relief work in France and the remainder to the work of the Red Cross.

President Galloway reported that the bound volumes of *Transactions* of the Society (donated by Mr. Schulze as prizes for essays written by Juniors) had been awarded to Messrs. Bolin and Bithers for a paper entitled "The Sewers of Berkeley", which would be presented before the Association at a later date.

Attention was called to the joint meeting of the Local Sections of the American Society of Mechanical Engineers, the American Institute of Mining Engineers, the American Institute of Electrical Engineers, the American Chemical Society, and the American Society of Civil Engineers, to be held on October 25th, 1917, in honor of Dr. Ira N. Hollis, President of the American Society of Mechanical Engineers.

A paper by Mr. M. M. O'Shaughnessy, entitled "The Tunnels of San Francisco", was presented by the author.

President Galloway presented a letter from Joseph Jacobs, President of the Seattle Association, in which Mr. Jacobs suggested changes in the status of the Local Associations.

A letter was also read from the Connecticut Society of Civil Engineers suggesting the advisability of fostering among college students

the formation of some undergraduate Society, which would lead the men to consideration of affiliation with the Society. A letter was read from Mr. E. T. Thurston, now at the Engineers' Training Camp, Vancouver Barracks, Wash., in which he reported rapid progress being made at the Camp. Mr. Bowers reported having visited the new Headquarters of the Society in the Engineering Societies Building, in New York City, and gave a short description of the rooms.

Adjourned.

Colorado Association, Organized 1908.

Robert Follansbee, President; L. R. Hinman, Secretary-Treasurer, 1400 West Colfax Avenue, Denver, Colo.

The meetings of the Colorado Association of Members of the American Society of Civil Engineers (Denver, Colo.) are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesdays at 12.30 P. M., at Daniel's and Fisher's.

Visiting members are urged to attend the meetings and luncheons.

Atlanta Association, Organized 1912.

Paul H. Norcross, President; Thomas P. Branch, Secretary-Treasurer, Georgia School of Technology, Atlanta, Ga.

The Association holds its meetings at the University Club, Atlanta, Ga. Regular monthly luncheon meetings are held to which visiting members of the Society are always welcome.

Baltimore Association, Organized 1914.

Mason D. Pratt, President; Charles J. Tilden, Secretary-Treasurer, The Johns Hopkins University, Baltimore, Md.

Cleveland Association, Organized 1914.

W. J. Watson, President; George H. Tinker, Secretary-Treasurer, 516 Columbia Building, Cleveland, Ohio.

Detroit Association, Organized 1916.

T. A. Leisen, President; Clarence W. Hubbell, Secretary, 2348 Penobscot Building, Detroit, Mich.

The regular meetings of the Association are held on the second Friday of December, April, and October, the last being the Annual Meeting.

District of Columbia Association, Organized 1916.

A. P. Davis, President; John C. Hoyt, Secretary-Treasurer, U. S. Geological Survey, Washington, D. C.

Duluth Association, Organized 1917.

F. E. House, President; Walter G. Zimmermann, Secretary, Wolvin Building, Duluth, Minn.

The regular meetings of the Association are held at noon on the third Monday of each month (usually at the Kitchi Gamma Club), with luncheon, followed by a short business session and reading of papers. Visiting members of the American Society of Civil Engineers can secure from the Secretary definite information relating to the meetings, at which they will be welcomed. The Annual Meeting is held on the third Monday in May.

(Abstract of Minutes of Meeting)

October 15th, 1917.—The meeting was called to order; Vice-President Darling in the chair; Walter G. Zimmermann, Secretary; and present, also, 21 members and 1 guest.

The resignation of Mr. E. W. Kelly as Treasurer was accepted, he having received a commission as a Captain in the United States Engineers Reserve. Mr. John Carson was elected to fill the vacancy.

Mr. John H. Darling was unanimously suggested by the Association as member of the Nominating Committee to be chosen from District No. 7.

A letter was read from Mr. Edward P. Burch, of Minneapolis, Minn., inviting the Association to join with other Engineering Societies of the State in a dinner to Mr. John R. Allen, the new Dean of the College of Engineering and Architecture of the University of Minnesota, on October 18th, 1917. Mr. W. H. Hoyt was appointed the special representative of the Association at this dinner.

A discussion of the paper entitled "Soundings", which had been presented by Mr. O. H. Dickerson at a previous meeting, was continued, many of the members present taking part in it.

Adjourned.

Illinois Association, Organized 1916.

C. F. Loweth, President, Chicago, Ill.

The regular meetings of the Association are held on the second Monday of March, June, September, and December, the last being the Annual Meeting. The hour and place of meeting are not fixed, but this information will be furnished on application to the President.

Louisiana Association, Organized 1914.

W. B. Gregory, President; Charles W. Okey, Secretary, Tulane University, New Orleans, La.

The regular meetings of the Association are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

Nebraska Association, Organized 1917.

Frank T. Darrow, President; Homer V. Knouse, Secretary-Treasurer, 115 City Hall, Omaha, Nebr.

Regular meetings of the Association are held on the first Saturday of each month, except July and August, and at such places as may be appointed from time to time by the Executive Committee. The Annual Meeting is held in Lincoln, Nebr., on the second Friday in January.

It is probable that frequent luncheons will be held in Omaha, in addition to the monthly meetings, at which visiting members will be

welcomed. The place of meeting may be ascertained by communicating with the Secretary.

Northwestern Association, Organized 1914.

George L. Wilson, President; Ralph D. Thomas, Secretary, 508 South First Street, Minneapolis, Minn.

Philadelphia Association, Organized 1913.

Samuel T. Wagner, President; C. W. Thorn, Secretary, 1313 South Broad Street, Philadelphia, Pa.

The regular meetings of the Association are held at the Engineers' Club of Philadelphia, 1317 Spruce Street, on the First Monday in January, April, and October, the last being the Annual Meeting.

Portland, Ore., Association, Organized 1913.

J. P. Newell, President; J. A. Currey, Secretary, 194 North 13th Street, Portland, Ore.

St. Louis Association, Organized 1888 (1914).

J. A. Ockerson, President; C. M. Daily, Secretary-Treasurer, 4240 Shaw Avenue, St. Louis, Mo.

The Annual Meeting of the Association is held on the fourth Monday in November in the Auditorium of the Engineers Club of St. Louis. The time and place of other meetings are not fixed, but this information will be furnished on application to the Secretary.

(Abstract of Minutes of Meetings)

September 10th, 1917.—The meeting was called to order at 12.30 P. M., at the City Club; President Ockerson in the chair; Cornelius M. Daily (Secretary); and present, also, 16 members.

The minutes of the preceding meeting were read and approved.

President Ockerson read extracts from the minutes of the meeting of the Board of Direction in regard to correcting a statement in the *May Proceedings* as to the date of organization of the Association.

On motion, duly seconded, the following resolution was passed unanimously:

"Whereas: A local association of the St. Louis members of the American Society of Civil Engineers was organized in February, 1888, at which time a permanent Chairman, Vice-Chairman, and Secretary were elected, the names of the charter members being:

Robert Moore	R. Hering	B. L. Crosby
John A. Ockerson	A. M. Wellington	O. B. Wheeler
George A. Marr	W. Bartlett	Geo. H. Pegram
Edw. C. Rice	N. W. Eayrs	M. L. Holman
J. B. Johnson	J. Baler	— Parkhurst
Edw. Flad	— Blaisdell	Fred Brooks
C. V. Mersereau	R. E. McMath	T. J. Long
S. B. Russell	Carl Gaylor	Geo. Brant
		E. L. Meier

and

"Whereas: The said Association adopted a Constitution and By-laws which in their main features are similar to the Constitution and

By-laws approved by the American Society of Civil Engineers in 1914; therefore,

"Be it Resolved: That the Board of Direction be and is hereby requested to direct that under the general heading in the *Proceedings*, 'Local Associations of Members of the American Society of Civil Engineers', the date of organization of the St. Louis Association be hereafter stated as 1888 instead of 1914, adding the date of admission to the Society as 1914."

On motion, duly seconded, it was decided that the meetings for the coming year shall be held alternately mid-day and evening.

On motion, duly seconded, the Chairman was authorized to appoint a Nominating Committee to nominate officers for the annual election in November.

President Ockerson appointed a committee consisting of Messrs. Rolfe, Woermann, and Daily to arrange for meetings.

The Secretary was instructed to forward a copy of the resolutions to the Board of Direction and also ask for correction of the statement in the *Proceedings* relative to the place for holding meetings.

Adjourned.

October 5th, 1917.—The meeting was called to order at 12.30 P. M.; President Ockerson in the chair; Cornelius M. Daily, Secretary.

A motion that the Association, as evidence of its interest in all students of Civil Engineering, endorse the proposed amendment to the Constitution, permitting the formation of Student Branches, was carried; and the Secretary was instructed to inform the Committee, appointed by the Board of Direction to investigate the merit of the proposed amendment, and also the Connecticut Society, of the action of the Association in this matter.

Mr. Baxter L. Brown, of St. Louis, was the unanimous choice for the Nominating Committee from District No. 9.

On motion, duly seconded, a circular letter was ordered to be sent to all corporate members in District No. 9, requesting them to endorse Mr. Brown for the Nominating Committee.

Adjourned.

San Diego Association, Organized 1915.

W. J. Gough, President; J. R. Comly, Secretary-Treasurer, 4105 Falcon Street, San Diego, Cal.

Seattle Association, Organized 1913.

Joseph Jacobs, President; Carl H. Reeves, Secretary-Treasurer, 444 Henry Building, Seattle, Wash.

The regular meetings of the Association are held at 12.15 P. M., on the last Monday of each month, at The Frye Hotel.

Southern California Association, Organized 1914.

H. Hawgood, President; H. W. Dennis, Secretary, 329 San Fernando Building, Los Angeles, Cal.

The Southern California Association of Members of the American Society of Civil Engineers (Los Angeles, Cal.) holds regular bi-monthly

meetings with banquet, at Hotel Clark, on the second Wednesday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12:15 P. M. every Wednesday, and the place of meeting may be ascertained from the Secretary.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in Los Angeles, and any such member will be gladly welcomed as a guest at any of the meetings or luncheons.

(Abstract of Minutes of Meeting)

October 10th, 1917.—The meeting was called to order at 6 P. M., at the Hotel Clark; President Hawgood in the chair; and W. K. Barnard, acting as Secretary.

The reading of the minutes of the previous meeting was dispensed with.

President Hawgood announced the resignations of Mr. Charles H. Lee, as Treasurer, and Mr. Wilkie Woodard, as Secretary, of the Association, both having resigned in order to join the colors as officers in the Engineers' Reserve Corps.

The President announced that the Board of Directors had appointed Mr. H. W. Dennis to succeed Mr. Woodard as Secretary and Mr. Ralph J. Reed to succeed Mr. Lee as Treasurer for the unexpired portions of their terms of office.

Messrs. A. L. Sonderegger and C. C. Huff were appointed a Committee to audit the books of the Association before they were turned over to Mr. Reed.

A letter was read from the City Planning Association of Los Angeles inviting the Association to name five members who might be willing to co-operate with it in working out city planning projects.

A letter was read from Henry R. Buck, President of the Connecticut Society of Civil Engineers, relative to the formation of Student Branches of the Parent Society.

On motion, duly seconded, this movement was endorsed.

A letter from Joseph Jacobs, President of the Seattle Association, was read, bearing on the subject of the proper relation of the Parent Society to the Local Associations. Mr. Jacobs also enclosed a copy of a letter on the subject, which he had forwarded to the Society.

The Secretary was instructed to send copies of these communications to all members of the Association for their study, in order that discussion might be had thereon at the Annual Meeting and a definite report be made to the Parent Society immediately afterward.

Communications were read from Mr. H. F. Withey enclosing correspondence from Professor C. W. Cook, relative to engineering work being done by the University of California.

The President appointed Mr. Reed a committee to investigate the matter of engineering work and to determine further whether similar work was being done by other educational institutions in this territory.

The matter of subscription to the second Liberty Loan was announced by President Hawgood, who stated that information on the subject would be given to any member of the Association requesting it.

Mr. George A. Damon, Vice-President of the Joint Committee of

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The matter of subscription to the second Liberty Loan was announced by President Hawgood, who stated that information on the subject would be given to any member of the Association requesting it.

Mr. George A. Damon, Vice-President of the Joint Committee of

the Technical Societies of Los Angeles and Chairman of a Special Committee to formulate a plan for the presentation to the public of the engineering fundamentals of municipal and other public problems, addressed the meeting regarding the work of such a Committee. Mr. Damon's address was followed by a discussion on the subject by those present.

Adjourned.

Spokane Association, Organized 1914.

J. C. Ralston, President; B. J. Garnett, Secretary, City Hall, Spokane, Wash.

The regular meetings of the Association are held on the second Friday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

Visiting members are invited to attend the meetings and luncheons.

Texas Association, Organized 1913.

John B. Hawley, President; J. F. Witt, Secretary, Dallas, Tex.

Utah Association, Organized 1916.

George L. Swendsen, President; H. S. Kleinschmidt, Secretary-Treasurer, 306 Dooly Building, Salt Lake City, Utah.

The Annual Meeting of the Association is held on the first Wednesday in April. The time of other meetings is not fixed, but this information will be furnished on application to the Secretary.

**MINUTES OF MEETINGS OF
SPECIAL COMMITTEES**

TO REPORT UPON ENGINEERING SUBJECTS

Special Committee on Materials for Road Construction

October 15th, 1917.—The meeting was called to order at 9.45 A. M., at the House of the Society. Present, George W. Tillson (Chairman *pro tem.*), H. K. Bishop, A. W. Dean, Nelson P. Lewis, and A. H. Blanchard (Secretary).

The minutes of the meeting of August 17th, 1917, were approved.

The final reports of the Sub-Committees on "Introduction and General Principles" and "Subjects for Investigation", were discussed at length, and several amendments relative thereto were adopted.

October 22d, 1917.—The meeting was called to order at the House of the Society at 10 A. M. Present, George W. Tillson (Chairman *pro tem.*), H. K. Bishop, Nelson P. Lewis, and Arthur H. Blanchard (Secretary).

The minutes of the meeting of October 15th, 1916, were approved.

The final reports of the Sub-Committees on Introduction and General Principles, Subjects for Investigation, Asphalt Block Pavements, Bituminous Concrete Pavements, Bituminous Macadam Pavements, Bituminous Surface Treatments, Brick Pavements, Broken Stone Roads, Earth and Sand-Clay Roads, Gravel Roads, Sheet Asphalt Pavements, Stone Block Pavements, and Wood Block Pavements, were discussed and adopted as amended.

The final report of the Sub-Committee on "Forms" was discussed, and several amendments relative thereto were adopted.

On motion, duly seconded, the Committee adjourned to meet at 9.30 A. M., on Saturday, October 27th, 1917, at the Engineering Societies Building.

October 27th, 1917.—The meeting was called to order at 9.40 A. M., in the Engineering Societies Building. Present, George W. Tillson (Chairman *pro tem.*), A. W. Dean, Nelson P. Lewis, Charles J. Tilden, and Arthur H. Blanchard (Secretary).

The minutes of the meeting of October 22d, 1917, were approved.

The final reports of the Sub-Committees on the following sections of the 1918 Report, were discussed at length and adopted as amended: Forms, Cement-Concrete Pavements, Analyses and Tests of Non-Bituminous Materials, and Analyses and Tests of Bituminous Materials.

On motion, duly seconded, the 1918 Report was adopted *en bloc*.

On motion, duly seconded, the Committee adjourned *sine die*.

Special Committee on Stresses in Railroad Track

October 16th-17th, 1917.—The meeting was called to order in Chicago, Ill., two sessions being held on October 16th, and one on October 17th. Present, Messrs. Talbot (Chairman), Baldwin, Bremner, Bronson (representing Dudley), Brunner, Burton, Churchill, Cushing, Dawley, Gennet and Morgan (representing Hunt), Jackson (representing Stimson), Jenkins, La Bach, Larsson, McGuigan (representing Safford), Ray, Turneaure, Willoughby, H. R. Thomas, Assistant Engineer of Tests, and Fritch (Secretary).

The tentative draft of a Progress Report of the Committee, which had been sent to the members on September 15th, 1917, and additional matter distributed later and at this meeting, were discussed in detail and modifications made.

The Chairman was authorized to prepare the Introductory Matter and to present the report to the American Society of Civil Engineers and to the American Railway Engineering Association as a Progress Report of the Committee.

It was voted to ask members not present at the meeting or not represented whether they approved the proposed Progress Report. Plans for future work were also discussed.

Special Committee on Steel Columns and Struts

October 22d, 1917.—The meeting was called to order at the House of the Society at 8.15 P. M. Present, Lewis D. Rights (Chairman), James H. Edwards, Ralph Modjeski, George F. Swain, and C. W. Hudson (Secretary). Professor Nelson, of the Bureau of Standards, was also present.

The minutes of the previous meeting were read and approved.

On motion, duly seconded, it was decided that the Committee would prepare a final report and ask to be discharged.

The Chairman presented a rough draft of a final report, which was discussed, and many suggestions made by those present were incorporated in it.

On motion, duly seconded, the Chairman was instructed to revise the report and submit it to a meeting to be called later by the Chair.

The diagrams and tables submitted with the report were approved by the Committee, and the Chairman was requested to confer with the Secretary of the Society relative to having these prepared for publication in advance of the completion of the report.

**PRIVILEGES OF ENGINEERING SOCIETIES
EXTENDED TO MEMBERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS**

Members of the American Society of Civil Engineers will be welcomed by the following Engineering Societies, both to the use of their Reading Rooms, and at all meetings:

American Institute of Electrical Engineers, 25 West Thirty-ninth Street, New York City.

American Institute of Mining Engineers, 25 West Thirty-ninth Street, New York City.

American Society of Mechanical Engineers, 25 West Thirty-ninth Street, New York City.

Associação dos Engenheiros Civis Portugueses, Lisbon, Portugal.

Australasian Institute of Mining Engineers, Melbourne, Victoria, Australia.

Boston Society of Civil Engineers, 715 Tremont Temple, Boston, Mass.

Brooklyn Engineers' Club, 117 Remsen Street, Brooklyn, N. Y.

Canadian Society of Civil Engineers, 176 Mansfield Street, Montreal, Que., Canada.

Civil Engineers' Society of St. Paul, St. Paul, Minn.

Cleveland Engineering Society, Chamber of Commerce Building, Cleveland, Ohio.

Cleveland Institute of Engineers, Middlesbrough, England.

Dansk Ingeniorforening, Amaliegade 38, Copenhagen, Denmark.

Detroit Engineering Society, 46 Grand River Avenue, West, Detroit, Mich.

Engineering Association of Nashville, Commercial Club Building, Nashville, Tenn.

Engineers and Architects Club of Louisville, 1412 Starks Building, Louisville, Ky.

Engineers' Club of Baltimore, 6 West Eager Street, Baltimore, Md.

Engineers' Club of Kansas City, E. B. Murray, Secretary, 920 Walnut Street, Kansas City, Mo.

Engineers' Club of Minneapolis, 17 South Sixth Street, Minneapolis, Minn.

Engineers' Club of Philadelphia, 1317 Spruce Street, Philadelphia, Pa.

Engineers' Club of St. Louis, 3817 Olive Street, St. Louis, Mo.

Engineers' Club of Toronto, 96 King Street, West, Toronto, Ont., Canada.

Engineers' Club of Trenton, Trent Theatre Building, 12 North Warren Street, Trenton, N. J.

Engineers' Society of Northeastern Pennsylvania, 415 Washington Avenue, Scranton, Pa.

Engineers' Society of Pennsylvania, 31 South Front Street, Harrisburg, Pa.

Engineers' Society of Western Pennsylvania, 568 Union Arcade Building, Pittsburgh, Pa.

Florida Engineering Society, J. R. Benton, Secretary, Gainesville, Fla.

Institute of Marine Engineers, The Minories, Tower Hill, London, E., England.

Institution of Civil Engineers, Great George Street, Westminster, S. W., London, England.

Institution of Engineers of the River Plate, Calle 25 de Mayo 195, Buenos Aires, Argentine Republic.

Institution of Naval Architects, 5 Adelphi Terrace, London, W. C., England.

Junior Institution of Engineers, 39 Victoria Street, Westminster, S. W., London, England.

Koninklijk Instituut van Ingenieurs, The Hague, The Netherlands.

Louisiana Engineering Society, State Museum Building, Chartres and St. Ann Streets, New Orleans, La.

Memphis Engineers' Club, Memphis, Tenn.

Midland Institute of Mining, Civil and Mechanical Engineers, Sheffield, England.

Montana Society of Engineers, Butte, Mont.

North of England Institute of Mining and Mechanical Engineers, Newcastle-upon-Tyne, England.

Oregon Society of Civil Engineers, Portland, Ore.

Pacific Northwest Society of Engineers, 803 Central Building, Seattle, Wash.

Rochester Engineering Society, Rochester, N. Y.

Sociedad Colombiana de Ingenieros, Bogota, Colombia.

Sociedad de Ingenieros del Peru, Lima, Peru.

Societe des Ingénieurs Civils de France, 19 rue Blanche, Paris, France.

Society of Engineers, 17 Victoria Street, Westminster, S. W., London, England.

Svenska Teknologforeningen, Brunkebergstorg 18, Stockholm, Sweden.

Tekniske Forening, Vestre Boulevard 18-1, Copenhagen, Denmark.

Vermont Society of Engineers, George A. Reed, Secretary, Montpelier, Vt.

Western Society of Engineers, 1735 Monadnock Block, Chicago, Ill.

**ACCESSIONS TO THE
UNITED ENGINEERING SOCIETY LIBRARY**

(From October 2d to November 1st, 1917)

DONATIONS*

The statements made in these notices are taken directly from the books themselves, and this Society is not responsible for them.

ELECTRICAL ENGINEERING:

The Theory and Characteristics of Electrical Circuits and Machinery. By Clarence V. Christie. 2d ed., rev. and enl. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 20 + 546 pp., 508 illus., 9 x 6 in., cloth. \$4.00.

Much new material has been added to this edition, the most important additions being sections on complex alternating waves and wave analysis, on polyphase alternating-current circuits, the construction of the characteristic curves of direct-current generators and motors, the design of direct and alternating-current machinery, the Blondel diagram for the synchronous motor, the symbolic method of analysis of the induction motor, alternating-current commutator motors, and a chapter on measuring instruments.

A TREATISE ON THE ELEMENTS OF ELECTRICAL ENGINEERING:

A Text Book for Colleges and Technical Schools. By William S. Franklin. Vol. 1, Direct and Alternating Current Machines and Systems. N. Y., The Macmillan Company, 1917. 465 pp., 368 illus., 9 x 6 in., cloth. \$4.50. (Gift of the author.)

Written to encourage a first course in electrical engineering covering both direct and alternating-current machines and systems. The emphasis throughout is on the simple physics of the subject and on operating engineering. The book entitled "Electric Lighting and Miscellaneous Applications of Electricity" will henceforth be known as Vol. 2 of the present treatise.

PRACTICAL ELECTRIC ILLUMINATION.

By Terrell Croft. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 11 + 225 pp., 166 illus., 8 x 6 in., cloth. \$2.00.

Contains a concise account of the principles of illumination, the methods used and the proper ways of lighting indoor and outdoor spaces used for specific purposes. Contents: Preface; Fundamental Ideas of Light Radiation; Principles and Units; Reflectors; Incandescent Lamps; Arc Lamps; Nernst, Mercury-Vapor and Tube Lamps; Principles of Illumination Design; Interior Illumination; Exterior Illumination.

X-RAYS.

By G. W. C. Kaye. 2d ed. N. Y. and Lond., Longmans, Green, and Co., 1917. 17 + 285 pp., 115 illus., 9 x 6 in., cloth. \$3.00.

The author of this book is the head of the Radium and X-Ray Department of the National Physical Laboratory. The subject-matter gives an account of such of the present-day methods and apparatus as appear valuable or novel, with a critical treatment of some of the features which have claimed the author's interest. The development of theory is discussed, and a summary of the history of the X-ray, from 1895 to the middle of 1916, is included.

* Unless otherwise specified, books in this list have been donated by the publishers.

ELEMENTS OF MACHINE DESIGN.

By O. A. Leutwiler. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 15 + 607 pp., 339 illus., 9 x 6 in., cloth. \$4.00.

Written to present in fairly completed form a discussion of the fundamental principles involved in the design and operation of machinery, and to outline or suggest methods of reasoning which may prove helpful in the design of various parts. Brief reviews are included of the more important straining actions to which machine parts are subjected and of the properties of the common materials used in machine construction, and references to additional sources of information accompany the various chapters.

MECHANICAL DRAWING PROBLEMS.

By Charles William Weick. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 9 + 153 pp., 120 illus., 1 pl., 9 x 6 in., cloth. \$1.25.

A book of examples and problems intended to be used under the direction of a teacher. It aims to provide a large number of typical drawings carefully worked out as examples, accompanied by appropriate problems. These vary in difficulty sufficiently to enable the teacher to formulate suitable courses for all schools where mechanical drawing is taught.

STEAM BOILERS:

A Practical and Authoritative Discussion of Boiler Design and Construction, and the Development of Modern Types. Revised by Robert H. Kuss. Chicago, American Technical Society, 1917. 82 pp., 74 illus., 8 x 6 in., cloth. \$1.00.

Covers in a practical manner the methods of construction, the proper testing of materials, and the methods of riveting and stayed. Describes different types of stationary and marine boilers.

STEAM CHARTS

And Special Tables for Turbine Calculations. By F. O. Ellenwood. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 49 pp., 18 charts. \$1.00.

Comprises a series of charts and tables to assist engineers in making calculations involving wet or superheated steam. In the present edition, intended for those thoroughly conversant with the application of the tables, the problems and explanatory matter have been eliminated. Tables giving the theoretical velocities of steam for each tenth of a heat unit up to 80 British thermal units, and the squares of numbers from 200 to 2 000 have been added.

LUBRICATING ENGINEERS HANDBOOK:

A Reference Book of Data, Tables, and General Information for the Use of Lubricating Engineers, Oil Salesmen, Operating Engineers, Mill and Power Plant Superintendents and Machinery Designers, etc. By John Rome Battle. Phila. and Lond., J. B. Lippincott Company (copyright 1917). 333 pp., 112 illus., 9 x 6 in., cloth. \$4.00.

Describes the properties of various lubricants and the methods of testing them, and discusses the proper methods of lubricating steam and gas engines, refrigerating machinery, railway cars, locomotives, rolling mills, pneumatic tools, etc.

THE PRINCIPLES OF AEROGRAPHY.

By Alexander McAdie. N. Y. and Chic., Rand McNally Co. (copyright 1917). 12 + 318 pp., 112 illus., 8 x 6 in., cloth. \$3.00.

The author's especial aim has been to give prominence to the results of recent aërological investigations. The centimeter-gram-second system of units is used. More than usual attention is given to cloud forms and the thermodynamics of their formation and dissipation.

AEROPLANE DESIGN.

By F. S. Barnwell, and "A Simple Explanation of Inherent Stability", by W. H. Sayers. N. Y., Robert M. McBride & Co., 1917. 102 pp., 28 illus., 7 x 5 in., cloth. \$1.00.

These two papers have been published in *The Aeroplane*. In the first, Mr. Barnwell attempts a *précis* of the general principles for the information of trained engineers without experience in airplane design. Mr. Sayers offers a non-mathematical explanation of the known principles by which inherent stability may be attained.

LEARNING TO FLY IN THE U. S. ARMY:

A Manual of Aviation Practice. By E. N. Fales. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 9 + 180 pp., 39 illus., 1 pl., 7 x 5 in., leather. \$1.50.

Parallels the instruction given under the author's direction in the U. S. Ground School of Military Aeronautics, University of Illinois Branch. Sets forth for the non-technical student aviator what he must know in order properly to understand his airplane, to keep it trued up, and to operate it in cross-country flights.

MACHINE GUNS:

Part 1, Mechanism, by Capt. Julian S. Hatcher; Part 2, The Practical Handling of Machine Gun Fire, by First Lt. Glenn P. Wilhelm; Part 3, Machine Gun Tactics, by First Lt. Harry J. Malony. Menasha, George Banta Publishing Company (copyright 1917). 233 pp., 84 illus., 3 diagrams, 8 x 5 in., cloth. \$2.50.

The authors have been instructors in the Machine Gun School, at Harlingen, Tex., since its establishment in 1916, and have based this manual on notes made during their work. The guns described are the Benet-Mercié, the Lewis, the Maxim, the Vickers, and the Colt.

APPLIED ELECTROCHEMISTRY AND WELDING:

A Practical Treatise on Commercial Chemistry, the Electric Furnace, the Manufacture of Ozone and Nitrogen by High-Tension Discharges, and the Applications of Electric, Gas and Chemical Welding to Manufacturing and Repair Work. Part 1, Applied Electrochemistry, by Charles F. Burgess; Part 2, Welding, by George W. Cravens. Chicago, American Technical Society, 1917. 83 + 132 pp., 186 illus., 8 x 6 in., cloth. \$1.50.

A concise account of the principles involved in electrolysis, electrothermics, and electrical discharges in gases, of the apparatus used commercially, and of the products obtained. The section devoted to welding describes the methods of riveting, welding, soldering, and cutting with electricity, gases, and thermit.

CHEMISTRY IN THE SERVICE OF MAN.

By Alexander Findlay. 2d ed. N. Y. and Lond., Longmans, Green and Co., 1917. 15 + 272 pp., 23 illus., 3 por., cloth. \$2.00.

An account of some of the more important general principles and theories of chemical science and of their industrial applications, intended for the general reader. A certain amount of new matter has been added to this edition, including a new chapter on Fermentation and Enzyme Action.

CALCULATIONS USED IN CANE SUGAR FACTORIES:

A Practical System of Chemical Control for the Sugar Houses of Louisiana, the Tropics, and Other Cane-Producing Countries. By Irving H. Morse. 2d ed., rewritten. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 189 pp., 7 x 4 in., cloth. \$2.00.

Intended for technical superintendents and chief chemists of sugar mills.

THE THEORY AND PRACTICE OF SCIENTIFIC MANAGEMENT.

By C. Bertrand Thompson. Bost., N. Y., and Chic., Houghton Mifflin Co. 319 pp., 8 x 5 in., cloth. \$1.75.

An attempt to present the facts concerning the subject and to appraise the movement as a whole. Contents: What Scientific Management Is; Frederick Winslow Taylor; Scientific Management in Practice; Economic Aspects of Scientific Management; The Literature of Scientific Management; Bibliography.

SCIENTIFIC OFFICE MANAGEMENT.

By W. H. Leffingwell. N. Y., Chic. and Lond., A. W. Shaw Company (copyright 1917). 253 pp., 32 illus., 3 diagrams, 11 x 9 in., cloth. \$10.00.

This is a report on the results obtained by the author during ten years experience in the application to office work of the principles of the Taylor system, including planning, analysis, time and motion study, task and bonus plans, etc. Gives a plan for applying the system.

OFFICE MANUAL.

Including Policy Book and Standard Practice Instructions. N. Y., A. W. Shaw Co. (copyright 1917). 50 pp., 10 x 8 in., cardboard.

A sample office manual supplementing Leffingwell's "Scientific Office Management" and intended to assist managers in preparing a manual for their own establishments.

LIABILITY AND COMPENSATION INSURANCE:

Industrial Accidents and Their Prevention, Employers' Liability, Workmen's Compensation, Insurance of Employers' Liability and Workmen's Compensation. By Ralph H. Blanchard. N. Y. and Lond., D. Appleton & Company, 1917. 12 + 394 pp., 13 illus., 8 x 5 in., cloth. \$2.00.

Intended to present the results of the workmen's compensation movement in the United States in terms of legislation and insurance practice, and to explain the industrial accident problem and the development of liability and compensation principles as a background for the comprehension of present problems.

THE ESSENTIALS OF DESCRIPTIVE GEOMETRY.

By F. G. Higbee. 2d ed., rev. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 218 pp., 177 illus., 9 x 6 in., cloth. \$1.80.

A textbook discussing the subject from the point of view of a draftsman, in which are included only those portions of it which possess industrial utility. In addition to the correction and revision of the text of the first edition, a chapter on tangencies has been added.

THE J. E. ALDRED LECTURES ON ENGINEERING PRACTICE 1916-1917.

The Johns Hopkins University, Department of Engineering. Baltimore, The John Hopkins Press. 254 pp., 82 illus., 9 diagrams, 1 map, 9 x 6 in., pap. (Gift of A. G. Christie.)

Comprises nine lectures delivered before the undergraduate engineering students of the University. The practical phases of engineering problems, rather than the underlying theory, are given prominence. Contents: The Operation of a Hydro-Electric Plant, by A. E. Bauhan; Some Things Engineers Should Know Concerning the Rudiments of Corporate Finance, by Ralph D. Mershon; The Development of Power from the Standpoint of the Boiler Room, by C. F. Hirshfeld; Power and Service in Industrial Plants, by R. J. S. Pigott; Gas Manufacture, Construction, and Operation, by George P. Marrow; Rapid Transit Problems in American Cities, by

George Staples Rice; Some Practical Problems Met with in the Design and Construction of Bridges and Similar Structures, by W. W. Pagon; Experimental Engineering, Particularly the Construction of Testing Stations on Water and Sewerage Problems, by Langdon Pearse; Public Utility Engineering and Finance, by Herbert A. Wagner.

HENDRICKS' COMMERCIAL REGISTER OF THE UNITED STATES, 1917-1918:

For Buyers and Sellers, with Which has been Incorporated "The Assistant Buyer," Especially Devoted to the Interests of the Architectural, Contracting, Electrical, Engineering, Hardware, Iron, Mechanical, Mill, Mining, Quarrying, Railroad, Steel, and Kindred Industries. N. Y., S. E. Hendricks Co., Inc., 1917. 2227 pp., 10 x 8 in., cloth. \$10.00.

Enlarged from the previous edition by more than 400 pages. Includes, as a new section, an alphabetic list of the firms and individuals appearing in the classified Trades Section.

INGENIERIA DE FERROCARRILES:

La Teoria y Practica Fundamental de Ferrocarriles, Desde la Conception del Idea Hasta la Terminacion del Trazo. Por Verne LeRoy Havens. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 10 + 357 pp., 48 illus., 1 diagram, 7 x 4 in., cloth. \$3.50.

A pocketbook for railway surveyors and locating engineers in Latin America, intended to meet the need for such a book in Spanish. Covers the entire work, from the preliminary commercial considerations to the final survey, including the documents and data required to accompany the surveys when submitted to South American Governments.

PRACTICAL ROAD BUILDING.

By Charles E. Foote. Endorsed by the National Highways Association and the American Automobile Association. Philadelphia, David McKay, 1917. 13 + 295 pp., 40 illus., 7 x 5 in., cloth. \$1.25.

A manual of information on the construction, maintenance, and advantages of the various types of roads used in America, intended to summarize present-day expert knowledge on the subject in a form intelligible to the general public.

PRACTICAL STRUCTURAL DESIGN:

A Text and Reference Work for Engineers, Architects, Builders, Draftsmen, and Technical Schools; Especially Adapted to the Needs of Self-Tutored Men. By Ernest McCullough. N. Y., U. P. C. Book Company, Inc., 1917. 303 pp., 185 illus., 9 x 6 in., cloth. \$2.50.

The subject-matter of this book is based on a series of articles on the "Design of Beams, Girders and Trusses", which appeared in *Building Age* during 1914, but includes much additional material.

WOOD AND OTHER ORGANIC STRUCTURAL MATERIALS.

By Charles Henry Snow. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1917. 18 + 478 pp., 90 illus., 9 x 6 in., cloth. \$5.00.

The materials described are woods, paints, and varnishes—with their associated oils, pigments, gums, and resins—glues, creosotes, and india rubber. The author presents the general as well as the physical characteristics of this group of materials, gives in convenient tabular form descriptions of the various woods, discusses the failure of wood because of age, decay, fire, and animal attacks, and the methods of protection from these destructive agencies. Full bibliographic notes are included.

THE BUILDING ESTIMATOR'S REFERENCE BOOK:

A Practical and Thoroughly Reliable Reference Book for Contractors and Estimators Engaged in Estimating the Cost of and Constructing All Classes of Modern Buildings; Giving the Actual Labor Costs and Methods Employed in the Erection of Some of Our Present Day Structures, Together with All Necessary Material Prices and Labor Quantities Entering Into the Cost of All Classes of Buildings. By Frank R. Walker. 2d ed., rev. Chic., Frank R. Walker, 1917. 3535 pp., 7 x 5 in., leather. \$5.00. (Gift of the author.)

Presents costs compiled from the actual cost sheets, and chiefly from construction work under the author's supervision.

WATER-SUPPLY ENGINEERING:

The Designing and Constructing of Water-Supply Systems. By A. Prescott Folwell. 3d ed., rewritten. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1917. 15 + 484 pp., 121 illus., 9 x 6 in., cloth. \$3.50.

In this edition the matter treating of water purification and the quality of water has been entirely rewritten at much greater length; that describing pumping machinery is practically new throughout, and hardly a paragraph of the original text has been used without some change calculated to bring the subject up to date. To avoid making the book too large, the text relating to construction has been condensed to a single chapter, and that dealing with maintenance and hydraulics has been omitted.

OPERATION AND MAINTENANCE OF IRRIGATION SYSTEMS.

By S. T. Harding. N. Y., McGraw-Hill Book Company, Inc.; Lond., Hill Publishing Company, Ltd., 1917. 12 + 271 pp., 27 illus., 9 x 6 in., cloth. \$2.50.

A discussion of the policies and methods used in the United States, in which the general principles are given, together with typical examples of their local applications. Contents: General Maintenance; Maintenance of Irrigation Systems; Organization for Operation and Maintenance; Methods of Delivering Irrigation Water; Measurement of Irrigation Water; Rules and Regulations; Payment for Construction and Operation Charges; General Operation; Operation and Maintenance Accounts; Rules and Regulations.

ROLL OF HONOR

A List of Members of the Society who are Serving in the Army or Navy of the United States or Any of its Allies.*

Abbot, Frederic V. Brig-Gen., Corps of Engrs., N. A., Office, Chf. of Engrs., U. S. A., Washington, D. C.

Ackerman, Alexander S. 1st Lieut., E. O. R. C., Care, Depot Q. M., New York City.

Adams, Edward M. Maj., U. S. A., Care, The Adjutant-Gen., U. S. A., Washington, D. C.

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Allen, Ralph B. 1st Lieut., Co. B, 25th Engrs., Am. Exp. Force.

Allen, Walter Hinds. Civ. Engr., U. S. N.; Lt.-Commander; Public Works Officer, Navy Yard, New York City.

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Atterbury, W. W. Brig.-Gen.; Director Gen. of Transportation, Am. Exp. Force.

Austill, Hurieosco. Capt., E. O. R. C., Co. D, 501st Engr. Service Bn., Am. Exp. Force.

* This list is made up from replies to a circular forwarded to members of the Society, and others, and is probably neither accurate nor complete. It is requested that the attention of the Secretary be called to any omissions or inaccuracies in order that they may be corrected in subsequent lists.

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Potter, Charles L. Col., Corps of Engrs., U. S. A., New Interior Bldg., Washington, D. C.

Powell, A. O. Maj., E. O. R. C., Care, Office of Chf. of Engrs., Washington, D. C.

Powell, W. J. Capt., E. O. R. C., 6th Co., Fort Leavenworth, Kans.

Powelson, W. V. N. Lieut., U. S. N. (*Retired*), Crucible Steel Co., Harrison, N. J.

Price, Philip W. Lieut., 3d U. S. Field Artillery, Fort Myer, Va.

Price, T. E. Lieut., Canadian Exp. Force, Army Depot, Purfleet, Essex, England.

Pritchard, J. C. 1st Lieut., E. O. R. C., 46th Engrs., Camp Dix, Wrightstown, N. J.

Pugh, Marshall R. Maj., 21st Engrs. (Light Ry.), Camp Grant, Rockford, Ill.

Pung, William Sing Chong. Private, Co. D, 357th Inf., Camp Travis, San Antonio, Tex.

Purcell, Steuart. Capt., E. O. R. C., U. S. Engr. Depot, Hoboken, N. J.

Quinby, Edwin R. Capt., E. O. R. C.; Supt., Water and Light, 305th Engrs., Camp Lee, Petersburg, Va.

Quinlan, George A. Maj., 113th Engrs., Camp Shelby, Hattiesburg, Miss.

Quinn, Matthew F. Capt., 501st Engrs., Camp Merritt, Dumont, N. J.

Quinn, Thomas F. 1st Lieut., E. O. R. C., Fort Leavenworth, Kans.

Rakestraw, C. L. 1st Lieut., E. O. R. C., Vancouver Barracks, Vancouver, Wash.

Randolph, Robert Isham. Capt., E. O. R. C., Fort Leavenworth, Kans.

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Ream, Ward H. 1st Lieut., 305th Engrs., Camp Lee, Petersburg, Va.

Reimer, Arthur Adams. Maj., 305th Engrs., Camp Lee, Petersburg, Va.

Reimer, Frederic A. Maj., 104th Engrs., Camp McClellan, Anniston, Ala.

Renshaw, Alfred. Capt., 302d Engrs., Camp Upton, Yaphank, N. Y.

Reswick, Solomon. 1st Lieut., E. O. R. C., 721 Jay St., Rome, N. Y.

Rich, Melvin S. 1st Lieut., E. O. R. C., 1448 Howard St., N. W., Washington, D. C.

Richardson, F. H. Capt., E. O. R. C. (*Unassigned*), Republic, Wash.

Riché, Charles S. Col., Corps of Engrs., U. S. A.; Dept. Engr., Central Dept., Chicago, Ill.

Ridgeway, George A. 1st Lieut., 23d Engrs., Camp Meade, Baltimore, Md.

Risley, W. I. Capt., E. O. R. C., 504th Service Bn.

Ritchie, J. Milton. Capt., Q. M. R. C., 1156 Fifteenth St., N. W., Washington, D. C.

Ritow, Herman. Co. B, 302d Engrs., Camp Upton, Yaphank, N. Y.

Roberts, Harry A. Capt., E. O. R. C., 602 Terminal Bldg., Hoboken, N. J.

Robertson, A. K. Lieut., Royal Anglesea Engrs., France.

Robinson, Ernest F. Capt., 102d Engrs., Camp Wadsworth, Spartanburg, S. C.

Robson, Ralph E. Capt., E. O. R. C., 316th Engrs. Camp Lewis, Tacoma, Wash.

Rockenbach, S. D. Col. of Cavalry, U. S. A., Am. Exp. Force, France.

Rose, W. H. Lt.-Col., Corps of Engrs., U. S. A., 1419 F St., N. W., Washington, D. C.

Rosenthal, J. J. Capt., E. O. R. C., Vancouver Barracks, Vancouver, Wash.

Ross, James G. Capt., Co. C, 306th Engrs., Camp Jackson, Columbia, S. C.

Ruggles, Arthur V. Capt., E. O. R. C., 4th Co., Fort Leavenworth, Kans.

Ruttan, H. N. Brig.-Gen., Commanding M. D. 10, Winnipeg, Man., Canada.

Sadler, Carl L. Capt., E. O. R. C., Kalamazoo, Mich.

Sadler, Walter Clifford. 1st Lieut., Co. F, 18th Engrs. (Ry.), U. S. Army P. O. No. 705, Am. Exp. Force, France.

Sanger, Walter M. Capt., E. O. R. C., 4th Co., Fort Leavenworth, Kans.

Sargent, Edward H. Capt., E. O. R. C., 20th Engrs.; Camp Adjt., Camp American University, Washington, D. C.

Scammell, John Kimball. Lieut., 13th Reserve Bn., Canadian, Seaford, Sussex Co., England.

Scheidenhelm, F. W. Capt., E. O. R. C., 26th Engrs., Am. Exp. Force, France.

Schmucker, Beale M. 1st Lieut., E. O. R. C., 104th Engrs., Camp McClellan, Anniston, Ala.

Schoder, Ernest W. Capt., E. O. R. C., 3d Co., Camp American University, Washington, D. C.

Schwendener, K. DeW. Capt., 115th Engrs., Camp Kearney, San Diego, Cal.

Seage, Clarence E. Ensign, U. S. N., Ordnance Dept., U. S. N., Washington, D. C.

Seward, Oscar, Jr. Capt., E. O. R. C., 315th Engrs., San Antonio, Tex.

Shafer, Ernest Alton. 1st Lieut., E. O. R. C., Vancouver Barracks, Vancouver, Wash.

Shankland, Ralph Graham. 1st Lieut., E. O. R. C., Fort Leavenworth, Kans.

Shaw, Arthur Lassell. Capt., E. O. R. C., Camp Devens, Ayer, Mass.

Shaw, Arthur M. Maj., E. O. R. C.; Const. Q. M., Camp Beauregard, Alexandria, La.

Shaw, Franklin Dickinson. Capt., E. O. R. C., Philadelphia, Pa.

Sheppard, Norman K. Master Engr., Junior Grade, Headquarters Co., 313th Engrs., Camp Dodge, Des Moines, Iowa.

Sherron, George A. Capt., E. O. R. C., 5th Co., Fort Leavenworth, Kans.

Skelly, J. W. Capt.; Supply Officer, 12th Engrs. (Ry.), Am. Exp. Force, France.

Sleppy, K. B. Capt., 4th U. S. Engrs., Vancouver Barracks, Vancouver, Wash.

Slifer, Hiram J. Lt.-Col., 21st Engrs. (Light Ry.), Camp Grant, Rockford, Ill.

Sloan, W. G. 1st Lieut., E. O. R. C. (*Unassigned*), U. S. R. S. Bldg., Boise, Idaho.

Smallman, R. A. 1st Lieut., Co. D, 25th Engrs., Camp Devens, Ayer, Mass.

Smead, R. C. Maj., E. O. R. C. (*Unassigned*); Dist. Engr., in Chg. of River, Harbor, and Fortification Works, Galveston Eng. Dist., Galveston, Tex.

Smith, Albert. Capt., E. O. R. C., 3d Co., Fort Leavenworth, Kans.

Smith, Albert. Maj., 2d Bn., 309th Engrs., Camp Zachary Taylor, Louisville, Ky.

Smith, Charles V. Capt., Co. E, 107th Engrs., Camp McArthur, Waco, Tex.

Smith, Chester K. Lieut., Co. E., 18th Engrs. (Ry.), Am. Exp. Force.

Smith, Clarke Stull. Col., 311th Engrs., Camp Grant, Rockford, Ill.

Smith, Francis M. Capt., E. O. R. C., Fort Leavenworth, Kans.

Smith, Layton Fontaine. Lieut., Junior Grade, U. S. N. R., Navy Yard, Charleston, S. C.

Smith, Maxwell W. Capt., E. U. S. R.; Engr. Officer, 308th Engrs., Camp Sherman, Chillicothe, Ohio.

Smith, Merritt H. Col., 1st N. Y. Field Artillery, N. G. U. S.

Smith, S. M. 1st Lieut., Co. D, 12th Engrs. (Ry.), Am. Exp. Force, France.

Snook, Thomas E., Jr. 1st Lieut., E. O. R. C., 261 Broadway, New York City.

Snyder, George Duncan. Capt., 102d Engrs., Camp Wadsworth, Spartanburg, S. C.

Soest, Hugo C. 1st Lieut., E. O. R. C., Co. A, 25th Engrs., Am. Exp. Force, France.

Spear, Walter E. Maj., Q. M. R. C., in Chg. of Utilities, Camp Upton, Yaphank, N. Y.

Sperry, L. N. 1st Lieut., E. O. R. C., Old Forge, N. Y.

Stanton, Charles B. Capt., Co. E, 15th Engrs., Care Adjutant Gen., U. S. A., Washington, D. C.

Stayton, Edward M. Maj., 110th Engrs., Camp Doniphan, Fort Sill, Okla.

Stearns, Fred LeRoy. Lieut., Co. A, 107th Inf., U. S. A., Camp Wadsworth, Spartanburg, S. C.

Steep, James B. Capt., E. O. R. C. (*Unassigned*), 918 Majestic Bldg., Indianapolis, Ind.

Steese, James Gordon. Lt.-Col., Corps of Engrs., U. S. A.; Asst. to Chf. of Engrs., Washington, D. C.

Steinberg, Max. 1st Lieut., U. S. R., U. S. Coast and Geodetic Survey, Washington, D. C.

Stephens, Uel. 2d Lieut., E. O. R. C., 5th Co., Leon Springs, Tex.

Stickle, H. W. Lt.-Col., U. S. A. (*Retired*), U. S. Engr. Office, Pittsburgh, Pa.

Stiles, Arthur Alvord. Maj., E. O. R. C., Capitol Station, Austin, Tex.

Stivers, A. D. Capt., E. O. R. C., Office of Chf. of Staff, Camp Kearney, San Diego, Cal.

Stowe, H. D. Capt., E. O. R. C.; Director General of Rys., 734 Fifteenth St., N. W., Washington, D. C.

Strecker, R. A. Capt., E. O. R. C., Co. A, 309th Engrs., Camp Zachary Taylor, Louisville, Ky.

Street, J. Z. Private, Co. E, 308th Engrs., Camp Sherman, Chillicothe, Ohio.

Strickler, F. W. Capt., E. O. R. C. (*Unassigned*); Dist. Engr., Erie R. R. Co., Room 301, K. of C. Bldg., Youngstown, Ohio.

Strickler, T. J. Capt., E. O. R. C., Fort Leavenworth, Kans.

Stroebe, George G. Capt., N. A., Philippine Islands.

Sturtevant, C. W. Maj., E. O. R. C., 1st Bn., 5th Engrs., Pittsburgh, Pa.

Summers, R. E. J. 1st Lieut., E. O. R. C., Co. F, 16th U. S. Engrs. (Ry.), Am. Exp. Force.

Suter, Russell. Capt., E. O. R. C., Am. Exp. Force, France.

Sutton, Frank. Maj., E. O. R. C., 2d Bn., 25th Engrs., Camp Devens, Ayer, Mass.

Swaren, J. W. Capt., E. O. R. C.; Engr. Instructor, E. O. T. C., Vancouver Barracks, Vancouver, Wash.

Sweeney, Harry C. Capt., Q. M. R. C.; Asst. Const. Q. M., U. S. Cantonment, Ayer, Mass.

Sykes, George. Capt., E. O. R. C. (*Unattached*), Am. Exp. Force, France.

Tainter, F. S. Maj., E. O. R. C., 60 Wall St., New York City.

Tate, R. L. 1st Lieut., E. O. R. C., 303d Engrs., Camp Dix, Wrightstown, N. J.

Taylor, Henry. Capt., E. O. R. C., 304th Engrs., Camp Meade, Baltimore, Md.

Tenney, Willis R. Capt., 304th Engrs., Camp Meade, Baltimore, Md.

Thomas, Charles D. Capt., E. O. R. C., 220 Lincoln St., Marlboro, Mass.

Throop, George H. Capt., E. O. R. C., Co. E, 24th Engrs., Camp Dix, Wrightstown, N. J.

Thurston, Eugene T. Capt., E. O. R. C., Vancouver Barracks, Vancouver, Wash.

Tilden, Charles Joseph. Capt., E. O. R. C. (*Unassigned*), Care, Johns Hopkins Univ., Baltimore, Md.

Todd, Frank Herbert. Maj., Q. M. R. C., in Chg. of Utilities, Camp Travis, San Antonio, Tex.

Tolles, F. C. Private, Engr. Corps, Ohio Div., Camp Sheridan, Montgomery, Ala.

Topping, Perry. Capt., E. O. R. C., Fort Leavenworth, Kans.

Townsend, C. McD. Col., Corps of Engrs., U. S. A., 12th Engrs. (Ry.), Am. Exp. Force, France.

Trout, Alex Linn. Capt., E. O. R. C., 2d Co., Fort Leavenworth, Kans.

True, Albert O. Capt., E. O. R. C. (*Unassigned*), High St., Rensselaer, N. Y.

Trueblood, P. McG. Lieut., U. S. N. R., U. S. S. *Wm. Rockefeller*, Care, Postmaster, New York City.

Tucker, H. F. Ensign, U. S. N. R., Seattle Construction & Dry Dock Co., Seattle, Wash.

Tuska, Gustave R. Maj., E. O. R. C., 68 William St., New York City.

Tyson, William C. Capt., E. O. R. C., 6th Co., Fort Leavenworth, Kans.

Value, B. R. 1st Lieut., 11th Engrs. (Ry.), Am. Exp. Force, France.

Van Buren, Maurice Pelham. 2d Lieut., Corps of Engrs., U. S. A., New Brighton, N. Y.

Vandemoer, N. C. Capt., E. O. R. C., 1113 East 13th Ave., Denver, Colo.

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Wagner, John, Jr. 1st Lieut., Cavalry U. S. R., Am. Exp. Force.

Walker, Elton D. Capt., E. O. R. C., Co. A, 5th Engrs., Am. Exp. Force, France.

Walker, Harry Bruce. Capt., E. O. R. C., Fort Leavenworth, Kans.

Walker, Meriwether Lewis. Col., Corps of Engrs., U. S. A., 116th Engrs., 41st Div., Camp Mills, Hempstead, N. Y.

Walker, W. Kemp. Capt., E. O. R. C. (*Unassigned*), Montpelier, Ohio.

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Ward, Lyman Wise. Capt., C. A. U. S. R., 5th Co., C. A. C., Fort Warden, Wash.

Ware, John. 1st Lieut., Co. A, 101st Engrs., Am. Exp. Force, France.

Ware, Norton. Capt., E. O. R. C., Vancouver Barracks, Vancouver, Wash.

Waring, C. T. Maj., Signal Corps, Langley Field, Hampton, Va.

Warren, James G. Col., Corps of Engrs., U. S. A., 540 Federal Bldg., Buffalo, N. Y.

Washington, W. O. Capt., E. O. R. C. (*Unassigned*), San Antonio, Tex.

Wasner, Elwin S. Capt., E. O. R. C., Co. B, 301st Engrs., Camp Devens, Ayer, Mass.

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Way, W. F. Sergeant, Co. D, 18th Engrs. (Ry.), U. S. Army Post Office No. 705, Am. Exp. Force, France.

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Weaver, Frank L. 1st Lieut., 305th Engrs., Camp Lee, Petersburg, Va.

Webb, George H. Lt.-Col., 16th U. S. Engrs. (Ry.), Am. Exp. Force, France.

Webb, I. Gano. Capt., E. O. R. C., Care, Harbor Comm., Ferry Bldg., San Francisco, Cal.

Webb, Walter Loring. Maj., E. O. R. C., Am. Exp. Force.

Webster, Maurice A. 1st Lieut., O. O. R. C., Aberdeen Proving Ground, Aberdeen, Md.

Welles, Theodore L., Jr. 2d Lieut., E. O. R. C., 4th Co., Fort Leavenworth, Kans.

Wenige, Arthur E. Capt., Co. A, 15th Inf., N. G. U. S.

Wenzell, Andrew P. Capt., Co. F, 16th U. S. Engrs. (Ry.), Am. Exp. Force, France.

West, Edward Hazzard. Capt., E. O. R. C., Fort Leavenworth, Kans.

Wheat, G. Neville. Capt., E. O. R. C., Fort Leavenworth, Kans.

Whiteaker, Robert O. Capt., Troop C, 1st Tex. Cav., Camp Bowie, near Fort Worth, Tex.

Whitman, Ezra B. Maj., Q. M. R. C.; Chf. Engr. of Utilities, Camp Meade, Admiral, Md.

Whitney, Ralph Edward. 1st Lieut., Sanitary Corps, N. A., Camp Greenleaf, Fort Oglethorpe, Ga.

Wickersham, John H. Capt., E. O. R. C., Engr's. Constr. Gang, Phoenix Constr. Co., Am. Exp. Force, France.

Wiggin, Thomas H. Capt., E. O. R. C., Care, Gen. Taylor, Am. Exp. Force, France.

Wild, H. J. Capt., E. O. R. C., War Dept., Washington, D. C.

Wilgus, W. J. Maj., E. O. R. C.; Director Gen. of Transportation, Headquarters, Am. Exp. Force, France.

Williams, Alan F. Headquarters Co., 18th Engrs. (Ry.), Am. Exp. Force, France.

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Williar, Harry D., Jr. 1st Lieut., Co. E, U. S. Engrs., Am. Exp. Force, France.

Wilson, Harry P. Capt., E. O. R. C., Fort Leavenworth, Kans.

Wing, Charles B. Maj., 23d Engrs., Camp Meade, Admiral, Md.

Winn, Walter E. Maj., 114th Engrs. (Pioneer Regt.), Camp Beauregard, Alexandria, La.

Winton, Walter Ferrell. Capt., 14th U. S. Field Artillery, Fort Sill, Okla.

Wood, Frederic J. Maj., E. O. R. C., 15th, cor., M Sts., N. W., Washington, D. C.

Woodle, Bernon Tisdale. Capt., 305th Engrs., Care, Depot Engr., Coca Cola Bldg., Baltimore, Md.

Woolworth, W. H. 1st Lieut., 28th U. S. Infantry; A. D. C., 2d Brigade, 1st Div., Am. Exp. Force, France.

Wright, John Bertram. Capt., E. O. R. C., P. O. Box 411, Oxford, Mass.

Wrightson, William D. Maj.; Chf. of San. Corps, Surgeon-General's Office, War Dept., Washington, D. C.

Yereance, Alex. W. Lieut., Co. F, 305th Engrs., Camp Lee, Petersburg, Va.

Yost, Howard McC. Capt., E. O. R. C., 2030 F St., N. W., Washington, D. C.

Young, Samuel. Capt., E. O. R. C. (*Unassigned*), 635 Common St., New Orleans, La.

MEMBERSHIP

(From October 5th to November 8th, 1917)

ADDITIONS

MEMBERS	Date of Membership.
ALLEN, JAMES. Highway Commr., State of Washington, Olympia, Wash.....	Oct. 9, 1917
BARGLEBAUGH, CHARLES ERWIN. With Lang & Witchell, 703 First National Bank Bldg., El Paso, Tex.....	Oct. 9, 1917
BARROWS, GEORGE ELLSWORTH. Cons. Engr. (Ellsworth, Barrows & Reeves), 50 West Eagle St., Buffalo, N. Y.....	May 2, 1911 Oct. 9, 1917
BATTLE, JOHN BEALLE. Asst., U. S. Engr. Corps, Tuscaloosa, Ala.....	Oct. 9, 1917
COOKSEY, ROBERT MAVIN. Highways Engr., City Hall, Baltimore, Md.....	July 2, 1913 Oct. 9, 1917
CRAGIN, CHARLES CALHOUN. Capt., Co. C, 18th Engrs., (Ry.), Am. Exp. Force, France.....	Sept. 11, 1917
GRIFFIN, AUGUSTUS. Chf. Engr. and Supt., South San Joaquin Irrig. Dist., Man-teca, Cal.....	Oct. 30, 1906 May 28, 1912 Oct. 9, 1917
HAMMEL, VICTOR FRANK. Engr. of Designs, Elec. Bond & Share Co., 71 Broadway, New York City.....	Oct. 31, 1911 Oct. 9, 1917
HARZA, LEROY FRANCIS. Chf. Engr., James O. Heyworth, 421 Cedar St., Sault Ste. Marie, Mich.....	Oct. 9, 1917
HENDERSON, HERBERT. Constr. Engr., Gulf Refining Co., Port Arthur, Tex.....	Oct. 9, 1917
JESSEN, NILS HERMAN BAASHUUS. Care, Chile Exploration Co., 120 Broadway, New York City.....	Oct. 9, 1917
MULLEN, CHARLES WARD. Engr. Member, State Public Utilities Comm., Bangor, Me.....	Sept. 11, 1917
NUMATA, HISANORI. Chf. Engr., Civ. and Archt. Dept., Imperial Govt. Steel Works, Yawata City, Japan...	May 15, 1917
PIEPMEIER, BION HARMAN. Maintenance Engr., State Highway Dept., Springfield, Ill...	May 6, 1914 Oct. 9, 1917
PIERCE, PAUL LEON. Maj., Ordnance Dept., U. S. R., 65 Park Ave., New York City..	Jun. Jan. 7, 1908 Assoc. M. Oct. 3, 1911 M. Oct. 9, 1917
REEVE, LEROY NORMAN. Structural Engr., Am. International Shipbuilding Co., Broad and Cherry Sts., Philadelphia, Pa.....	Assoc. M. Sept. 3, 1913 M. Oct. 9, 1917
RICE, JOHN MARIE THOMAS. With Morris Knowles, 2541 Oliver Bldg. (Res., 5435 Black St.), Pittsburgh, Pa.....	Jun. April 12, 1907 Assoc. M. Dec. 6, 1910 M. June 12, 1917

MEMBERS (*Continued*)Date of
Membership.

TINSLEY, ROBERT BRUCE. Big Stone Gap, Va.	Assoe. M.	Feb. 6, 1912
TROTTER, DAVID CROOKER. Supt. of Constr., U. S. Public Bldgs., Kalispell, Mont.	Assoe. M.	Oct. 9, 1917
	M.	Sept. 6, 1910
	M.	Sept. 11, 1917

ASSOCIATE MEMBERS

ANDREEN, GUSTAF BIRGER. Structural Engr., Bldg. Dept., Public Service Ry. of New Jersey, 12 Eighteenth St., Elmhurst, N. Y.	Oct. 9, 1917
ASHTON, RAYMOND. (Cattell, Howard & Ashton), 68 Post St., San Francisco, Cal.	June 11, 1917
BANTA, RUSSELL VINCENT. Structural Engr., 26 Cortlandt St., New York City.	May 31, 1910
BARSTOW, EUGENE DUSTON. City Engr., 69 North St., Cuyahoga Falls, Ohio.	Oct. 9, 1917
BESTOR, ODIN BALTIMORE. Asst. Field Engr., Interstate Commerce Comm., Care, Valuation Dept., Delaware & Hudson Co., Albany, N. Y.	Oct. 9, 1917
BOORMAN, KITCHELL MONCKTON. Sapper, Canadian Engrs. Training Depot, Saint Johns, Que., Canada.	Oct. 9, 1917
BOWNE, SIDNEY BREESE. Secy. and Treas., W. E. Sexton Co., Inc., Mineola, N. Y.	April 18, 1916
BROWN, HORACE TROWBRIDGE. Asst. Res. Engr., California Highway Comm., 26 Third St., San Francisco, Cal.	Oct. 9, 1917
CARLSON, PAUL NELS. With Grant Smith-Porter-Guthrie Co., Multnomah Hotel, Portland, Ore.	Oct. 9, 1917
CHAMBERLIN, CHARLES GROVER. Engr.-in-Chg. of Appraisal of Kansas Gas & Elec. Co., for Paine, McClellan & Campion, 237 South Main St., Wichita, Kans.	Oct. 9, 1917
CRAWFORD, HUGH WILLIAM. Capt., Co. A, 110th Engrs., 35th Div., Camp Doniphan, Fort Sill, Okla.	Oct. 9, 1917
CULPEPER, HORACE. Office and Field Man, Gulf Pipe Line Co., Houston, Tex.	Oct. 9, 1917
CUTLER, DANIEL BOYDEN. Asst. Engr., St. L. S. W. Ry., 4399 Forest Park, St. Louis, Mo.	May 15, 1917
DE WITT, BRINTON BROWN. Civ. Engr., Central Fe, Salamanca, Santa Clara, Cuba.	Sept. 11, 1917
DRESSER, GEORGE LUCAS. Bridge Engr., Jennison Wright Co.; Contr. Engr., Standard Eng. Co. of Toledo, Ohio, 2632 Whitehall Bldg., New York City.	Oct. 9, 1917
EDDY, HAROLD MANSFIELD. With Pickands, Mather & Co. of Cleveland, 1136 Walnut Ave., N. E., Canton, Ohio.	Oct. 9, 1917
FARNER, GEORGE KEITHLEY. Asst. Engr., C., M. & St. P. Ry., 1009 Majestic Bldg., Milwaukee, Wis.	Oct. 9, 1917

ASSOCIATE MEMBERS (<i>Continued</i>)		Date of Membership.
FERGUSON, HARRY FOSTER. Lieut., 311th Engrs.,	{	Jun. June 23, 1916
Camp Grant, Rockport, Ill.	Assoc. M.	Oct. 9, 1917
FRANK, LESLIE CARL. San. Engr., U. S. Public Health Service, Hygienic Laboratory, 25th and E Sts., Washington, D. C.	{ Jun. Assoc. M.	Dec. 3, 1913 Sept. 11, 1917
FULLER, MYRON ELMER. 7131 Cresheim Rd., Philadelphia, Pa.		Sept. 11, 1917
GRiffin, GEORGE APPLETON. Asst. Engr., Board of Water Supply, Room 2200, Municipal Bldg., New York City.		April 17, 1917
HADLEY, HOMER MORE. Designer, V. D. Simons, 1212 Standard Bank Bldg., Vancouver, B. C., Canada.	{ Jun. Assoc. M.	April 5, 1910 Oct. 9, 1917
HAMMOND, LEWIS MERRICK. Structural Steel Work Draftsman, Bureau of Yards and Docks, Navy Dept. (Res., 234 V St., N. E.), Washington, D. C.	{ Jun. Assoc. M.	Mar. 2, 1915 Oct. 9, 1917
HARBERT, GUY MORLEY. County Road Engr., Harrison County, Clarksburg, W. Va.		Oct. 9, 1917
HEALY, FREDERIC GEORGE. Asst. Constr. Engr., Remington Arms & Union Metallic Cartridge Co., Inc., 586 Arctic St., Bridgeport, Conn.		Oct. 9, 1917
HOUSEHOLDER, FRANK JOHNSON. Industrial Engr., 405 Law Bldg., Baltimore, Md.		Oct. 9, 1917
JAKOBSEN, BERNHARD FAABORG. Designing Engr., F. G. Baum & Co. (Inc.), 1902 Hobart Bldg., San Francisco, Cal.		Oct. 9, 1917
JONES, WILLIAM DONELSON. Constr. Engr., Los Angeles Shipbuilding & Dry Dock Co., 783 Eleventh St., San Pedro, Cal.		Oct. 9, 1917
KAIser, BENEDICT JOSEPH. Designing and Superv. Engr., Prack & Perrine, 6961 Bennett St., Pittsburgh, Pa.		Oct. 9, 1917
KORNFIELD, HARRY. With Hugh L. Cooper & Co., 101 Park Ave, New York City (Res., 90 East 18th St., Brooklyn, N. Y.).	{ Jun. Assoc. M.	Sept. 3, 1912 Oct. 9, 1917
LLOYD, HENRY. Chf. Engr., Carey Act Dept., State Land Office, Capitol Bldg., Cheyenne, Wyo.		June 11, 1917
LOHR, WILLIAM SHANNON. Engr., John Wickersham, 638 North Pine St., Lancaster, Pa.		Oct. 9, 1917
McCLURE, HUNTER. Junior Civ. Engr., Div. of Valuation, Interstate Commerce Comm., 731 Wells Fargo Bldg., San Francisco, Cal.	{ Jun. Assoc. M.	Jan. 4, 1910 Oct. 9, 1917
McCOOL, HARRY ENGLAND. Designer, Duluth & Iron Range R. R., 244 West Faribault St., Duluth, Minn.		Oct. 9, 1917

ASSOCIATE MEMBERS (<i>Continued</i>)		Date of Membership.
McKINNELL, FREDERIC BERKBY. Engr., A., T. & S. F. Ry., Care, Chf. Engr., A., T. & S. F. Ry., Topeka, Kans...		Sept. 11, 1917
McMILLAN, FRANKLIN R. Asst. Prof., Structural Eng., Univ. of Minnesota, 524 Eighth Ave., S. E., Minneapolis, Minn.....		Sept. 11, 1917
MASSEI, CAESAR. Maj., Va. C. A.; Fort Commander, Fisherman's Island, Fort Monroe, Va.....	{ Jun. Assoc. M.	Jan. 2, 1912 Sept. 11, 1917
MEAD, WILLIAM HENRY. Chf. Engr., Producers Oil Co., Box 1735, Houston, Tex.....		Oct. 9, 1917
MICKEY, CLARK EDWIN. Asst. Prof. of Applied Mech., Univ. of Nebraska; Cons. and Testing Engr., Lincoln, Nebr.....	{ Assoc. Assoc. M.	Jan. 6, 1915 Oct. 9, 1917
MILLER, MELVILLE SAMPSON. Asst. Engr., Public Service Comm., 972a St. Johns Pl., Brooklyn, N. Y.....		Oct. 9, 1917
MOORE, STANLEY WALLACE. Estimator, Fred T. Ley & Co., Inc., 47 Cedar St., Springfield, Mass.....	{ Jun. Assoc. M.	July 1, 1909 Sept. 11, 1917
PAINE, ALLEN THATCHER. Asst. Engr., New York State Highway Comm., 1 Third St., Oneonta, N. Y.....		Sept. 11, 1917
PERKINS, ALVA HAROLD. Capt., E. O. R. C., 17th Engrs. (Ry.), Am. Exp. Forces, France.....		Oct. 9, 1917
PICKETT, FRANK HURD. With Am. Graphophone Co., 1112 Howard Ave., Bridgeport, Conn.....		Oct. 9, 1917
RIBLET, HARRY GAILLARD. Engr. with Metz & Roth, 144 East 8th St., Erie, Pa.....	{ Jun. Assoc. M.	Jan. 31, 1911 Oct. 9, 1917
ROCKWELL, HARLOW LOVERIDGE. Supervisor of Subway, New York Telephone Co. (Res., 207 Woodward Ave.), Buffalo, N. Y.....		Oct. 9, 1917
ROSE, ALSTON ORANGE. Asst. Engr., Morris Knowles, 1200 B. F. Jones Bldg., Pittsburgh, Pa.....	{ Jun. Assoc. M.	July 2, 1913 Oct. 9, 1917
SALLE, GEORGE VIALL. Supt., The Foundation Co., New York City, 665 West Front St., Cincinnati, Ohio....		Oct. 9, 1917
SAMMELMAN, CHARLES WILLIAM SYLVERIUS. Engr., Board of Public Service, 325 City Hall, St. Louis, Mo.....		Oct. 9, 1917
SCHMUCKER, BEALE MELANTHON. 1st Lieut., 104th Engrs., U. S. R., Camp McClellan, Ala.....		Oct. 9, 1917
SEGURA, VALERIANO. Dist. Engr., Bohol Prov., Bureau of Public Works, Box 23, Tagbilaran, Bohol, Philippine Islands.....	{ Jun. Assoc. M.	Oct. 1, 1913 May 15, 1917
SHAFFER, IVAN OSCAR. Concrete Engr., American Can Co., 120 Broadway, Room 1361, New York City.....		Oct. 9, 1917
SHARP, HERBERT MOORE. 2301 Maplewood Ave., Toledo, Ohio.....		Sept. 11, 1917

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		Date of Membership.
SHARE, HOMER J.	With Union Oil Co. of California, 1311 Union Oil Bldg., Los Angeles, Cal.	Jun. Assoc. M. April 4, 1911 Sept. 11, 1917
SHIMER, HARRY WOODWORTH.	Bureau of Eng., City Hall, San Francisco, Cal.	Sept. 11, 1917
SHIPLEY, ROBERT EARLE.	Drainage Engr., Texarkana Pipe Works, Texarkana, Ark.-Tex.	Oct. 9, 1917
SMITH, MAXWELL WAIDE.	Capt., 308th Engrs., U. S. R., Camp Sherman, Chillicothe, Ohio.	April 17, 1917
STEVENS, SAMUEL SPAULDING.	Asst. Field Engr., Div. of Valuation, Interstate Commerce Comm., East. Dist., Washington, D. C.	Oct. 9, 1917
STOFFLET, HERBERT MILLER.	Asst. Engr., C. M. & St. P. Ry., 612 East 41st St., Chicago, Ill.	Oct. 9, 1917
STUART, EDWARD.	Care, Engineer's Society, Harrisburg, Pa.	Oct. 9, 1917
SWINTON, ROY STANLEY.	Instr., Eng. Mech., Univ. of Michigan, 1126 Washtenaw Ave., Ann Arbor, Mich.	Jun. Assoc. M. May 2, 1911 Sept. 11, 1917
TORPEN, BERNHARDT E.	Care, Cerro de Pasco Min. Co., La Oroya, Peru.	April 17, 1917
VAN AMBURGH, THOMAS ALBERT.	225 Insurance Bldg., Oklahoma, Okla.	May 15, 1917
VAN DEN BROEK, JOHN ABRAHAM.	Instr. in Eng. Mechanics, Univ. of Michigan, 819 South State St., Ann Arbor, Mich.	Oct. 9, 1917
VERNER, JULIUS.	Chf. Draftsman, Gen. Eng. Dept., Standard Oil Co. (N. J.), Box 206, Linden, N. J.	Oct. 9, 1917
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WAND, ANTHONY WILLIAM.	Prof. of Civ. Eng., Univ. of New Mexico, Albuquerque, N. Mex.	Sept. 11, 1917
WARD, LYMAN WISE.	Capt., Coast Artillery Corps, Officers Reserve, U. S. A., Fort Worden, Wash.	April 17, 1917
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WINN, HARRY STRONG.	Senior Civ. Engr., Interstate Commerce Comm., Interstate Bldg., Kansas City, Mo.	Jun. Assoc. M. July 9, 1912 Oct. 9, 1917

November, 1917.] MEMBERSHIP—ADDITIONS—CHANGES OF ADDRESS 725

JUNIORS	Date of Membership.
BICKEL, GEORGE ROBERT. With Bickel Asphalt Co., 1315 Cherokee Rd., Louisville, Ky.....	Oct. 9, 1917
BREYMAN, JOHN BERNARD, JR. 2052 Robinwood Ave., Toledo, Ohio.....	May 15, 1917
FRITZ, WALTER. 502 East 5th St., Brooklyn, N. Y.....	Oct. 9, 1917
JACOBS, NATHAN BERND. Asst. Engr., Morris Knowles, 1200 Jones Bldg., Pittsburgh, Pa.....	Sept. 11, 1917
KEITH, GERALD MARCY. 2d Lieut., E. O. R. C., 301st Engrs., Camp Devens, Ayer, Mass.....	Sept. 11, 1917
LEFEVER, KENNETH WINANS. Instrumentman and Draftsman, Ford & MacCrea, 326 Gazette Bldg., Little Rock, Ark.....	Sept. 11, 1917
PARKER, JAMES. Asst. to Gen. Supt., Roxana Petroleum Co. of Oklahoma, Box 422, Tulsa, Okla.....	Oct. 9, 1917
RADER, JAMES WILSON. County Surv., Greenbrier County, Lewisburg, W. Va.....	April 17, 1917
RENSHAW, ALFRED. Capt., 302d Engrs., Camp Upton, N. Y.....	Oct. 9, 1917
REPKO, GEORGE ANTON. Queens Rd., Queens, N. Y.....	June 11, 1917
RITOW, HERMAN. Co. B, 302d Engrs., Camp Upton, N. Y.....	Oct. 9, 1917
SEXTON, GEORGE FRANCIS. Care, Const. Quartermaster, Camp Jackson, Columbia, S. C.....	May 15, 1917
STRACHAN, NORMAN FRASER. Asst. Engr., Kansas State Board of Health, 1339 Ohio St., Lawrence, Kans....	Oct. 9, 1917
TRUESELL, STEPHEN RIGGS. Asst. Engr., Office of Div. Engr., M. C. R. R., 265 West Main St., Jackson, Mich.	Oct. 9, 1917

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WOODY, NORMAN COOPER. Care, Valuation Engr., St. L. & S. F. Ry., 631 Frisco Bldg., St. Louis, Mo.

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JUNIORS

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GOMEZ, ERNESTO. Care, Russian Consulate, City of Mexico, Mexico.

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HOLT, ANDREW HALL. Capt., E. O. R. C., Presidio Training Camp, San Francisco, Cal.

HUTH, CHRISTIAN. Lieut., Ordnance Dept., U. S. R., Care, Div. of Am. Ordnance, Base Depot, Am. Exp. Forces, France.

JOHNSON, FRANCIS WHITTIER. Res. Engr., Group 2, Shipways, Raymond Concrete Pile Co., for Am. International Shipbuilding Corporation, Hog Island, Pa.

KNISKERN, PHILIP WHEELER. Capt., E. O. R. C., Fort Leavenworth, Kans.

LANDRETH, JAMES TAYLOR. Care, Dept. of Bldg. and Maintenance, Gen. Elec. Co., Erie, Pa.

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OATMAN, FRANKLYN WILLIAM. 1449 Hyde St., Apartment 4, San Francisco, Cal.

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POCKELS, WILLIAM HENRI FRANCOIS AUGUST. Care, C. H. Walker y Cia Retiro, Obras de la Puerta Neuva de la Capitol, Buenos Aires, Argentine Republic.

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SLEPPY, KIRBY BALDWIN. Capt., 4th Engrs., U. S. A., Vancouver Barracks, Wash.

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JUNIORS (*Continued*)

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WHEELER, FRANK IGNATIUS, JR. 2d Battery, R. O. T. C., Fort Myer, Va.

WILLIAMS, ALAN FRANK. Headquarters Co., 18th Engrs. (Ry.), Am. Exp. Forces, France.

WOODLE, BERNON TISDALE. Capt., 305th Engrs., Care, Depot Engr., Coca Cola Bldg., Baltimore, Md.

WOOLWORTH, WENDELL HOWARD. 1st Lieut., 28th Infantry; A. D. C., 2d Brigade, 1st Div., Am. Exp. Forces, France.

RESIGNATIONS

ASSOCIATE MEMBERS

Date of Resignation.

DOWNER, THOMAS BENSON..... Oct. 9, 1917

FOGG, PERCIVAL MORRIS..... Oct. 9, 1917

SKINNER, FREDERICK GARDINER..... Oct. 9, 1917

DEATHS

ANDREWS, DANIEL MARSHALL. Elected Member, March 2d, 1892; died June, 1917.

BACOT, WILLIAM SINCLAIR. Elected Member, October 1st, 1890; died October 31st, 1917.

CHITTENDEN, HIRAM MARTIN. Elected Member, February 7th, 1900; died October 9th, 1917.

COLBY, ELMER ELLSWORTH. Elected Member, January 7th, 1913; died September 27th, 1917.

GOULD, HARRY MADEIRA. Elected Member, November 30th, 1909; died September 30th, 1917.

MARR, WILLIAM WALTER. Elected Member, February 2d, 1909; died October 3d, 1917.

SWANKER, JOHN EDWARD. Elected Member, May 4th, 1904; died October 20th, 1917.

WACHTEL, LOUIS. Elected Junior, March 2d, 1909; Associate Member, September 2d, 1914; died October 10th, 1917.

Total Membership of the Society, November 8th, 1917,

8 534.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(August 2d to September 1st, 1917)

NOTE.—*This list is published for the purpose of placing before the members of this Society, the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.*

LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

- (2) *Proceedings, Engrs. Club of Phila.*, Philadelphia, Pa.
- (3) *Journal, Franklin Inst.*, Philadelphia, Pa., 50c.
- (4) *Journal, Western Soc. of Engrs.*, Chicago, Ill., 50c.
- (5) *Transactions, Can. Soc. C. E.*, Montreal, Que., Canada.
- (6) *Journal, Am. Inst. Architects*, Washington, D. C., 50c.
- (7) *Gesundheits Ingenieur*, München, Germany.
- (8) *Stevens Indicator*, Hoboken, N. J., 50c.
- (9) *Industrial Management*, New York City, 25c.
- (11) *Engineering (London)*, W. H. Wiley, 432 Fourth Ave., New York City, 25c.
- (12) *The Engineer (London)*, International News Co., New York City, 35c.
- (13) *Engineering News-Record*, New York City, 15c.
- (15) *Railway Age Gazette*, New York City, 15c.
- (16) *Engineering and Mining Journal*, New York City, 15c.
- (17) *Electric Railway Journal*, New York City, 10c.
- (18) *Railway Review*, Chicago, Ill., 15c.
- (19) *Scientific American Supplement*, New York City, 10c.
- (20) *Iron Age*, New York City, 20c.
- (21) *Railway Engineer*, London, England, 1s. 2d.
- (22) *Iron and Coal Trades Review*, London, England, 6d.
- (23) *Railway Gazette*, London, England, 6d.
- (24) *American Gas Engineering Journal*, New York City, 10c.
- (25) *Railway Mechanical Engineer*, New York City, 20c.
- (26) *Electrical Review*, London, England, 4d.
- (27) *Electrical World*, New York City, 10c.
- (28) *Journal, New England Water-Works Assoc.*, Boston, Mass., \$1.
- (29) *Journal, Royal Society of Arts*, London, England, 6d.
- (30) *Annales des Travaux Publics de Belgique*, Brussels, Belgium, 4 fr.
- (31) *Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand*, Brussels, Belgium, 4 fr.
- (32) *Mémoires et Compte Rendu des Travaux, Soc. Ing. Civ. de France*, Paris, France.
- (33) *Le Génie Civil*, Paris, France, 1 fr.
- (34) *Portefeuille Économiques des Machines*, Paris, France.
- (35) *Nouvelles Annales de la Construction*, Paris, France.
- (36) *Cornell Civil Engineer*, Ithaca, N. Y.
- (37) *Revue de Mécanique*, Paris, France.
- (38) *Revue Générale des Chemins de Fer et des Tramways*, Paris, France.
- (39) *Technisches Gemeindeblatt*, Berlin, Germany, 0, 70m.
- (40) *Zentralblatt der Bauverwaltung*, Berlin, Germany, 60 pf.
- (41) *Electrotechnische Zeitschrift*, Berlin, Germany.
- (42) *Proceedings, Am. Inst. Elec. Engrs.*, New York City, \$1.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (44) *Journal, Military Service Institution*, Governors Island, New York Harbor, 50c.
- (45) *Coal Age*, New York City, 10c.
- (46) *Scientific American*, New York City, 15c.
- (47) *Mechanical Engineer*, Manchester, England, 3d.
- (48) *Zeitschrift, Verein Deutscher Ingenieure*, Berlin, Germany, 1, 60m.
- (49) *Zeitschrift für Bauwesen*, Berlin, Germany.
- (50) *Stahl und Eisen*, Düsseldorf, Germany.
- (51) *Deutsche Bauzeitung*, Berlin, Germany.
- (52) *Rigasche Industrie-Zeitung*, Riga, Russia, 25 kop.
- (53) *Zeitschrift, Oesterreichischer Ingenieur und Architekten Vereines*, Vienna, Austria, 70h.
- (54) *Transactions, Am. Soc. C. E.*, New York City, \$12.
- (55) *Transactions, Am. Soc. M. E.*, New York City, \$10.
- (56) *Transactions, Am. Inst. Min. Engrs.*, New York City, \$6.

(57) *Colliery Guardian*, London, Eng-
land, 5d.

(58) *Proceedings*, Engrs' Soc. W. Pa.,
2511 Oliver Bldg., Pittsburgh, Pa.,
50c.

(59) *Proceedings*, American Water-
Works Assoc., Troy, N. Y.

(60) *Municipal Engineering*, Indianapolis,
Ind., 25c.

(61) *Proceedings*, Western Railway Club,
225 Dearborn St., Chicago, Ill.,
25c.

(62) *American Drop Forger*, Thaw Bldg.,
Pittsburgh, Pa., 10c.

(63) *Minutes of Proceedings*, Inst. C. E.,
London, England.

(64) *Power*, New York City, 5c.

(65) *Official Proceedings*, New York Rail-
road Club, Brooklyn, N. Y., 15c.

(66) *Gas Journal*, London, England, 6d.

(67) *Cement and Engineering News*,
Chicago, Ill., 25c.

(69) *Der Eisenbau*, Leipzig, Germany.

(71) *Journal, Iron and Steel Inst.*, Lon-
don, England.

(71a) *Carnegie Scholarship Memoirs*, Iron
and Steel Inst., London, England.

(72) *American Machinist*, New York City,
15c.

(73) *Electrician*, London, England, 18c.

(74) *Transactions*, Inst. of Min. and
Metal., London, England.

(75) *Proceedings*, Inst. of Mech. Engrs.,
London, England.

(76) *Brick*, Chicago, Ill., 20c.

(77) *Journal, Inst. Elec. Engrs.*, London,
England, 5s.

(78) *Beton und Eisen*, Vienna, Austria,
1, 50m.

(79) *Forschungsarbeiten*, Vienna, Austria.

(80) *Tonindustrie Zeitung*, Berlin, Ger-
many.

(81) *Zeitschrift für Architektur und In-
genieurwesen*, Wiesbaden, Ger-
many.

(83) *Gas Age*, New York City, 15c.

(84) *Le Ciment*, Paris, France.

(85) *Proceedings*, Am. Ry. Eng. Assoc.,
Chicago, Ill.

(86) *Engineering-Contracting*, Chicago,
Ill., 10c.

(87) *Railway Engineering and Mainte-
nance of Way*, Chicago, Ill., 10c.

(88) *Bulletin of the International Ry.
Congress Assoc.*, Brussels, Bel-
gium.

(89) *Proceedings*, Am. Soc. for Testing
Materials, Philadelphia, Pa., \$5.

(90) *Transactions*, Inst. of Naval
Archts., London, England.

(91) *Transactions*, Soc. Naval Archts.
and Marine Engrs., New York
City.

(92) *Bulletin*, Soc. d'Encouragement
pour l'Industrie Nationale, Paris,
France.

(93) *Revue de Métallurgie*, Paris,
France, 4 fr. 50.

(95) *International Marine Engineering*,
New York City, 20c.

(96) *Canadian Engineer*, Toronto, Ont.,
Canada, 10c.

(98) *Journal*, Engrs. Soc. Pa., Harris-
burg, Pa., 30c.

(99) *Proceedings*, Am. Soc. of Municipal
Improvements, New York City, \$2.

(100) *Professional Memoirs*, Corps of
Engrs., U. S. A., Washington,
D. C., 50c.

(101) *Metal Worker*, New York City, 10c.

(102) *Organ für die Fortschritte des
Eisenbahnwesens*, Wiesbaden, Ger-
many.

(103) *Mining and Scientific Press*, San
Francisco, Cal., 10c.

(104) *The Surveyor and Municipal and
County Engineer*, London, Eng-
land, 6d.

(105) *Metallurgical and Chemical En-
gineering*, New York City, 25c.

(106) *Transactions*, Inst. of Min. Engrs.,
London, England, 6s.

(107) *Schweizerische Bauzeitung*, Zürich,
Switzerland.

(108) *Southern Machinery*, Atlanta, Ga.
10c.

(109) *Journal*, Boston Soc. C. E., Boston,
Mass., 50c.

(110) *Journal*, Am. Concrete Inst., Phil-
adelphia, Pa., 50c.

(111) *Journal of Electricity, Power and
Gas*, San Francisco, Cal., 25c.

(112) *Internationale Zeitschrift für Was-
ser-Versorgung*, Leipzig, Germany.

(113) *Proceedings*, Am. Wood Preservers'
Assoc., Baltimore, Md.

(114) *Journal*, Institution of Municipal
and County Engineers, London,
England, 1s. 6d.

(115) *Journal*, Engrs' Club of St. Louis,
St. Louis, Mo., 35c.

(116) *Blast Furnace and Steel Plant*,
Pittsburgh, Pa., 15c.

LIST OF ARTICLES

Bridges.

Pavement Problems on New York Bridges.* (60) Aug.

Rebuilding Susquehanna River Bridge, Harrisburg. (67) Aug.

Cantilever Concrete Bridge has Suspended Link.* (13) Aug. 2.

Bridge Work on the Chalco-Yutan Cut-Off. (15) Aug. 3.

Kentucky Road Department has Standard Bridges. (13) Aug. 9.

Freezing Ground Acts Like Hydraulic Jack.* H. J. Gilkey. (13) Aug. 23.

Building a Bridge Under Adverse Conditions in San Domingo.* E. S. Needham.
(13) Aug. 23.

Construction of the Thames River Bridge, N. Y., N. H. & H. R. R.* (18) Aug. 25.

Points in Steel-Bridge Maintenance.* (13) Aug. 30.

Die Aufstellung der Hell-Gate-Brücke über den East-River in New York.* O. H. Ammann. (107) Aug. 4.

Electrical.

A Successful Electric Truck Delivery Service.* F. D. Weber. (111) Aug. 1.
 Electric Tractors at Pier 4, New York. (15) Aug. 3.
 Water-Rheostat Construction.* Norman L. Rea. (64) Aug. 7.
 Some Notes on Diving-Bell Covers for Disconnecting Boxes.* G. W. Stublings. (26) Aug. 10.
 Transmission Line Charging Currents. R. H. Marvin. (27) Serial beginning Aug. 11.
 Operation and Upkeep of Factory Lighting Systems.* C. E. Clewell. (27) Aug. 11.
 Special Testing Apparatus of Boston Edison Company.* C. L. Kasson. (27) Aug. 11.
 Size of Service Wires for a Group of Motors. F. D. Weber. (111) Aug. 15.
 A Radio Station in Salvador.* J. W. Finch. (111) Aug. 15.
 Halifax Corporation Electricity Works.* (26) Aug. 17.
 Initial and Operating Cost of Factory Lighting.* C. E. Clewell. (27) Aug. 18.
 Line Construction Cost. (27) Aug. 18.
 Regulation with V-Connected Transformers.* Leslie F. Curtis. (27) Aug. 18.
 Practical Talks on Controllers—Controllers for Wound-Rotor Motors.* (64) Aug. 21.
 The Examination of Commutation Conditions in Interpole Machines.* Frederick Murgatroyd. (26) Aug. 24.
 Fault Localization by Drop of Potential.* H. E. Blake. (26) Aug. 24.
 V. B. Cable Breakdowns in the Tropics.* D. M. W. Hutchison. (26) Aug. 24.
 Accurate Method of Measuring Motor Slip.* Milton M. Flanders. (27) Aug. 25.
 The Cathode Ray Tube and Its Applications.* M. E. Tressler. (19) Aug. 25.
 Features of Modern Standardizing Laboratory.* E. P. Peck. (27) Aug. 25.
 The Parallel Operation of Distribution Transformers. (27) Aug. 25.
 Apparent Sunlight for Underground Passage. (27) Aug. 25.
 Method of Paralleling A.-C. Generators Controlled by Regulator.* T. F. Barton. (64) Aug. 28.
 Balancer Used for Testing Purposes.* (26) Aug. 31.
 Notes on Alternating-Current Traction Motors. (26) Aug. 31.
 Mercury Rectifiers for Large Outputs.* (26) Aug. 31.
 Les Sous-Station à Commutatrices Électriques à Marche Automatique.* (33) July 21.
 Les Electrodes pour Fours Électriques Fabrication, Propriétés, Utilisation.* Jean Escard. (33) Aug. 4.

Marine.

Electric Drive for Battleship Tennessee.* (64) Aug. 7.
 The Marine Water-Tube Boiler.* Charles H. Bromley. (64) Aug. 14.
 Moving a 1 000-Ton Barge One Mile Overland.* (86) Aug. 15.
 Ferro-Concrete Vessels.* (11) Aug. 17.
 The Revival of the Monitor. (12) Aug. 17.
 Naval Power-Boat Construction in America.* (12) Aug. 17.
 Operation of Marine Evaporators.* Charles H. Bromley. (64) Aug. 21.
 The "Beardmore" Marine Oil Engine. (11) Aug. 24.
 The Development of Machinery in the United States Navy During the Past Ten Years. C. W. Dyson. (12) Aug. 24.
 Disappearing Guns for Submarines.* Louis Dayral. (19) Aug. 25.
 Gas Engine Drive for Submerged Submarines.* E. C. Crossman. (46) Aug. 25.
 Forced Draft for Marine Boilers.* Charles H. Bromley. (64) Aug. 28.
 Cost Plus Percentage Contract of Bureau of Yards and Docks. (86) Aug. 29.
 Gouvernail Hydraulique avec Régulateur Pratt.* (33) Aug. 4.
 La Flottabilité et la Stabilité des Sous-Marins.* (33) Aug. 25.
 Das Bootshaus des Zürcher Yacht-Club.* Pfelehard and Häfeli. (107) Aug. 18.

Mechanical.

Investigation of Stresses in Mill Housings.* J. D. Keller. (116) Aug.
 Roll Pass Design for Standard Rails.* W. S. Standiford. (116) Aug.
 Rolling Mill Power Requirements.* F. Denk. (116) Aug.
 Reducing the Cost of Forge Shop Fuel. M. T. Dean. (62) Aug.
 Pneumatic Ash-Handling Plant.* (12) Aug. 3.
 Stresses in Rotating Discs with a Hole at the Center.* W. Knight. (11) Aug. 3.
 Graphic Determination of Heat Units in Coal.* (16) Aug. 4.
 Liquid in Discharge Line Gives Trouble.* E. W. Miller. (64) Aug. 7.
 The Care of Turbine Oil. (64) Aug. 7.
 Method of Laying Submerged Gas Main in Winter. (86) Aug. 8.
 Modern Steel-Frame Shop Design used in New Foundry.* (13) Aug. 9.
 Coal Concreted from Dust or Ashes. R. Goulburn Lovell. (Paper read before the Soc. of Architects). (12) Aug. 10.
 Welding with Application to Automobile Engineering.* Herbert L. Towns. (Abstract of paper read before the Institution of Automobile Engrs.) (12) Aug. 10.

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Coal and Ash Plant at the Osaka Electric Works.* George Frederick Zimmer. (12) Aug. 10.

Some Bulb Experiments on Hot Bulb Engines.* (12) Aug. 10.

Low Temperature Carbonising and Some Products.* Robert Maclaurin. (Paper read before the Soc. of Chemical Industry at Glasgow.) (11) Aug. 10.

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Pressure Reducing and Regulating Valves.* J. C. Hawkins. (64) Aug. 17.

The Early History of the Manufacture of Sheet Iron and Terne Plates in America. Alfred Marshall. (Paper read before Metal Branch of National Hardware Assoc.) (101) Aug. 17.

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